

Indiana's State Wildlife Action Plan

Planning Region 4: Valleys & Hills

SURVEY 1 REPORT

SWAP

Conservation doesn't just happen. It requires resources and collaboration.

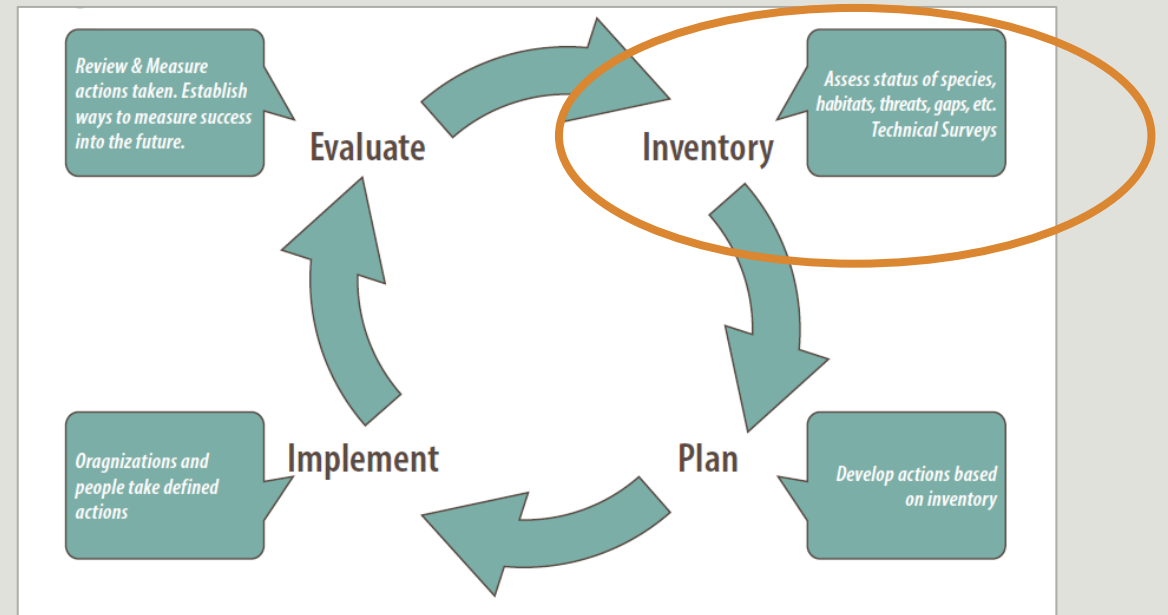
Survey 1: Purpose

Focused on species of greatest conservation need (SGCN)

Update status

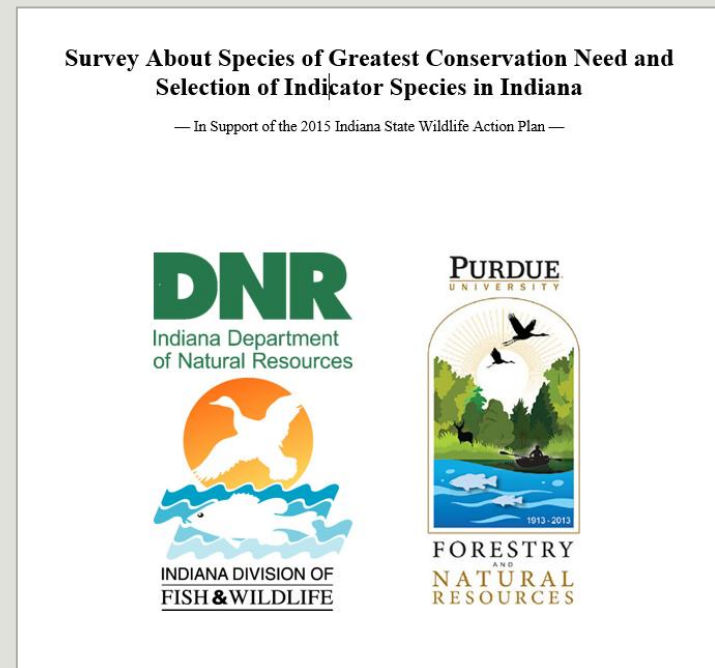
Assess trends

State-wide level



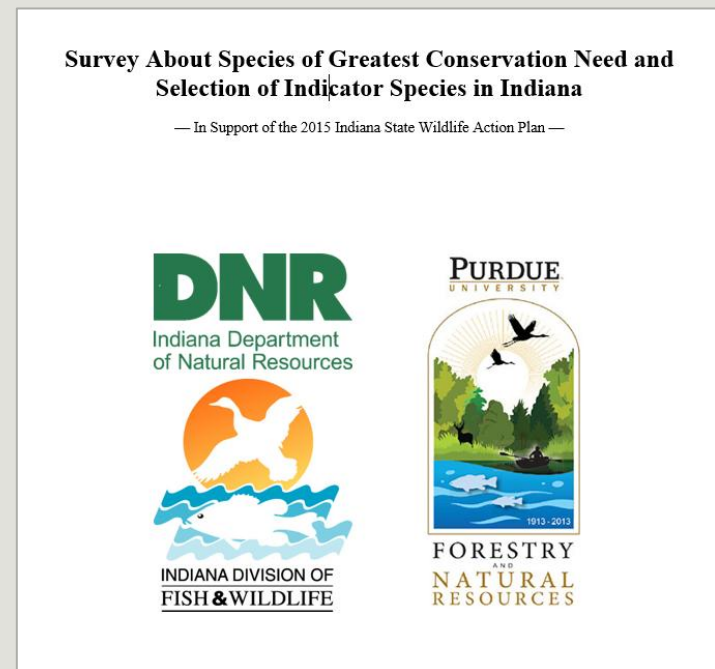
Survey 1 Questions

1. Update basic information about SGCN
 - Trends in abundance (past and future)
2. Assess habitat conditions for SGCN
 - Current conditions
 - Trends in quantity and quality (past and future)



Survey 1 Questions

3. Determine threats to SGCN using common language
4. Discuss conservation actions directly relevant to species
 - Barriers to implementation
 - Effectiveness of actions taken since 2005
5. Choose representative species for landscape-level habitat modelling
 - Regional level



Survey 1 Responses

Total responses: 486 (1-15 per species)

Additional data updates:

- Changes in species' conservation status
- Regional distribution
- Habitat associations
- Changes in land cover
- Insect distribution & habitat

Target audience:
technical experts from
state agencies,
universities, and other
organizations working
directly with SGCN

SGCN – Region 4

Mammals (17)

Subgroup	# species
Bats	12
Mustelids	2
Rabbits	1
Shrews	2



Swamp rabbit. Credit: Glenn Wilson

SGCN – Region 4

Breeding Birds (33)

Subgroup	# species
Herons & Bitterns	4
Shorebirds	2
Rails	3
Terns	2
Raptors	10
Nightjars	2
Songbirds	10



Mississippi kite. Credit: Ned Harris

SGCN – Region 4

Migratory Birds (11)

Subgroup	# Species
Cranes	2
Egrets	1
Rails	1
Shorebirds	6
Swans	1



Foraging shorebirds. Credit: NRCS

SGCN – Region 4

Amphibians & Reptiles (20)

Subgroup	# species
Aquatic salamanders	2
Terrestrial salamanders	2
Frogs	4
Snakes	7
Turtles	5



Alligator snapping turtle. Credit: USFWS



River cooter. Credit: John White



Red-bellied mudsnake. Credit: John Sullivan



Mole salamander. Credit: Rod Williams

SGCN – Region 4

Fish (10)

Subgroup	# species
Minnows	1
Catfish	1
Darters	5
Sunfish	1
Pygmy Sunfish	1
Sturgeons	1



Cypress darter. Credit: Joel Sartore



Banded pygmy sunfish. Credit: Dan Johnson

SGCN – Region 4

Mollusks (17)

Subgroup	# species
River Mussels	17



River mussel diversity. Credit: USFWS



Fat pocketbook mussel. Credit: Paul Hartfield, USFWS

Changes to SGCN List

Removed

- Bobcat
- River otter



Reintroduced river otters. Credit: IDNR

Removal suggested

- Bald eagle
- Osprey
- Peregrine falcon
- Sandhill crane
- Species occurring in Indiana on periphery of their range

Changes to SGCN List

Added

- Migratory shorebirds
 - Ruddy turnstone, buff-breasted sandpiper, short-billed dowitcher, Wilson's phalarope, American golden-plover, greater yellowlegs, solitary sandpiper
- Eastern small-footed myotis
- Northern cricket frog
- Mole salamander
- Eastern box turtle

Addition suggested

- All cave bats
- Ruffed grouse
- American woodcock
- Northern bobwhite



Cave bats affected by white-nose syndrome.
Credit: Bat Conservation Trust

Survey Results Summary

1. Trends in Abundance

- Past
- Future

2. Current Habitat conditions

- Total amount
- Overall quality

3. Past Habitat Trends

- Total amount
- Overall quality

4. Future Habitat Trends

- Total amount
- Overall quality

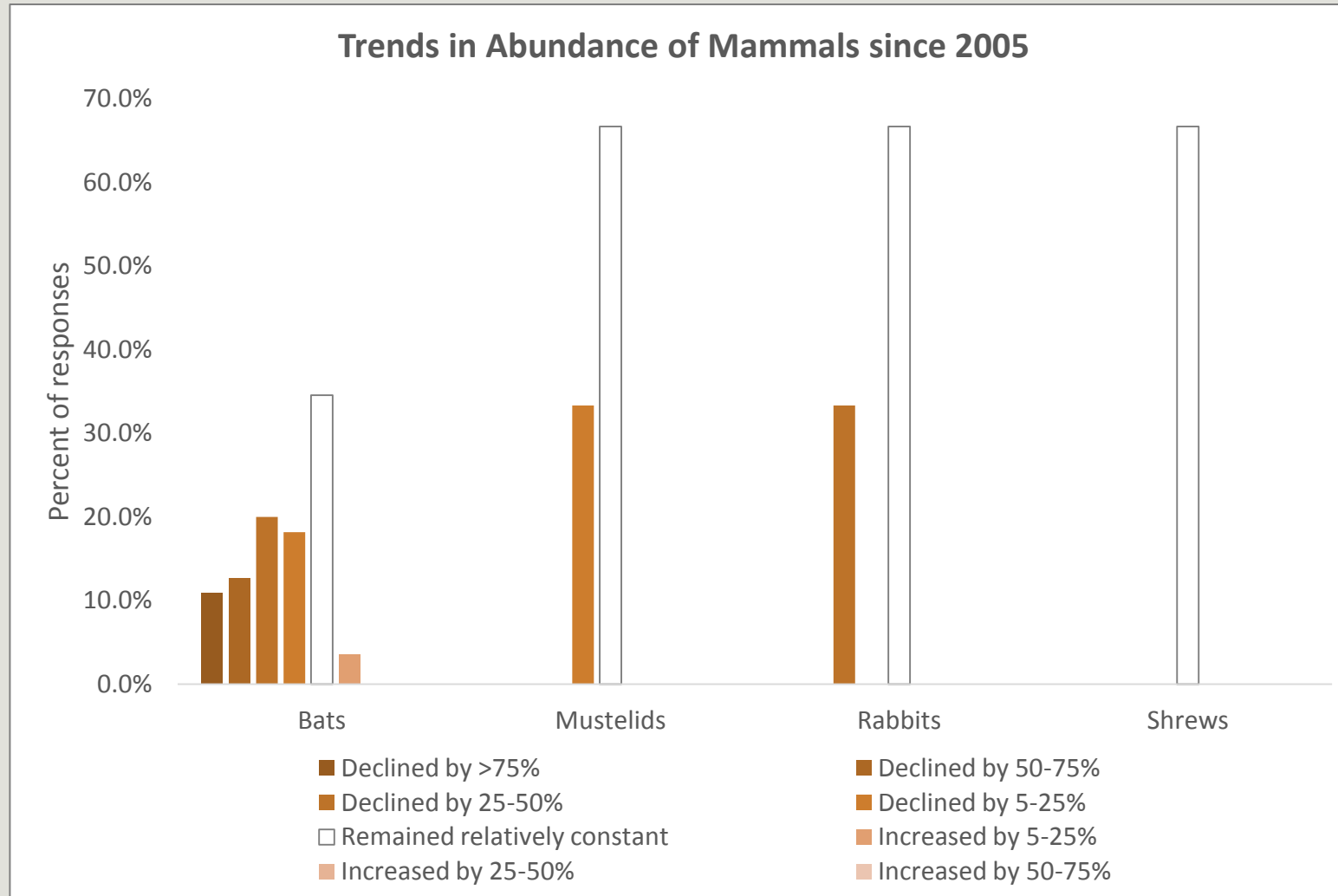
Survey Results: Past Trends in Abundance

Goal: Determine which species have declined or increased most since the 2005 SWAP was implemented, and get an overall sense of how populations of SGCN have done since then.

Question: Estimate the change in abundance of [species] in Indiana **since 2005.**

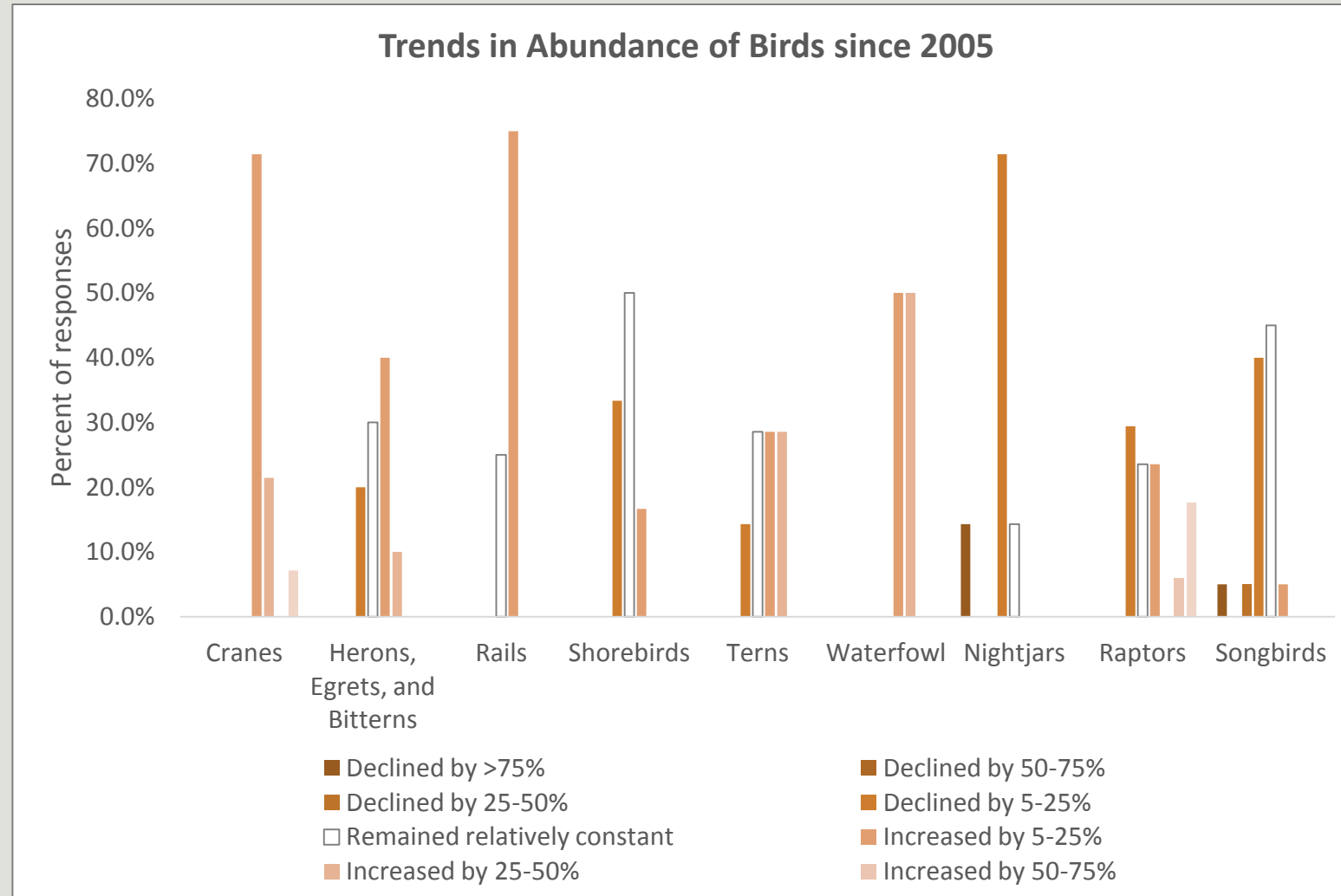
Survey Results: Trends in Abundance

Estimate the change in abundance of SGCN in Indiana since 2005.



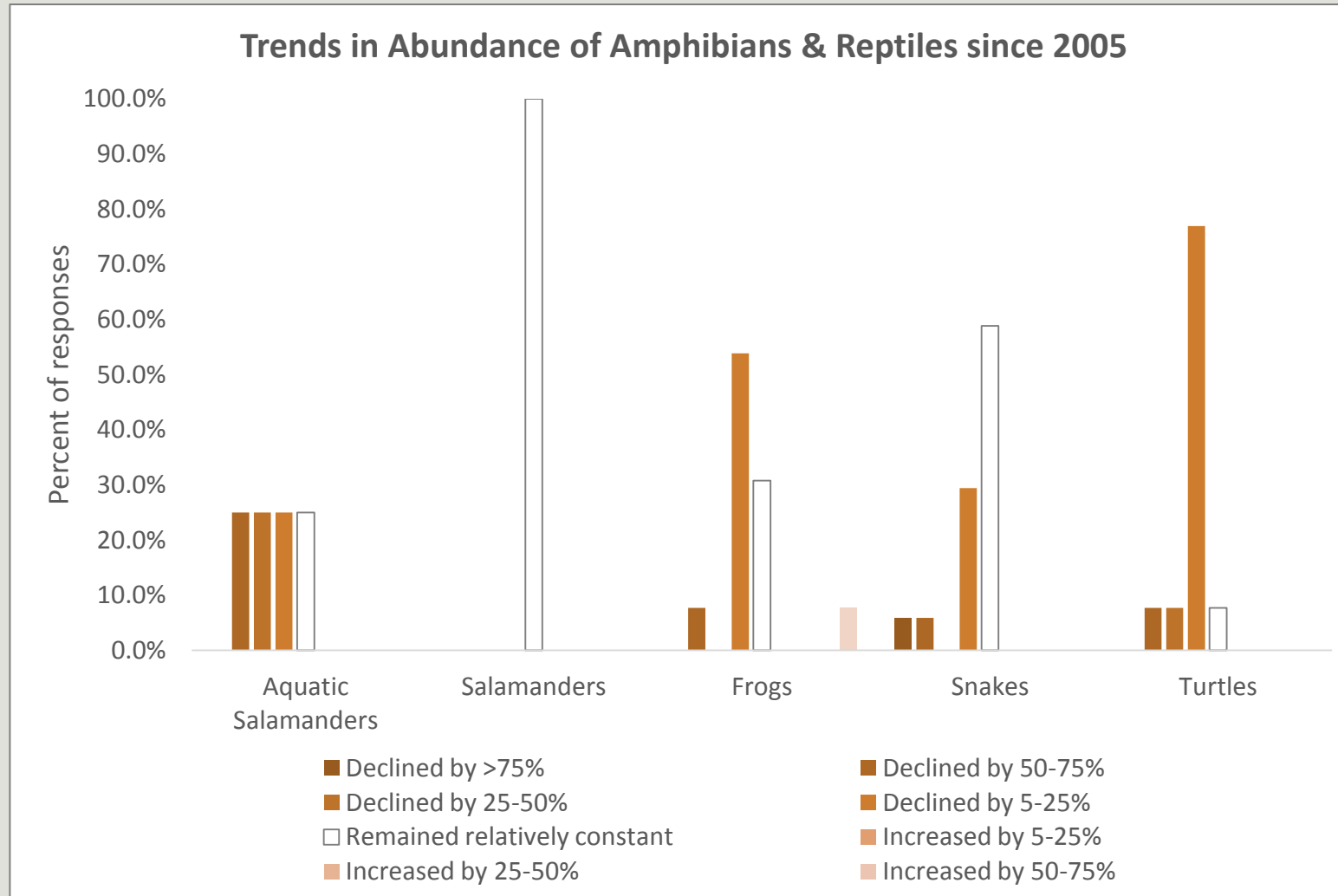
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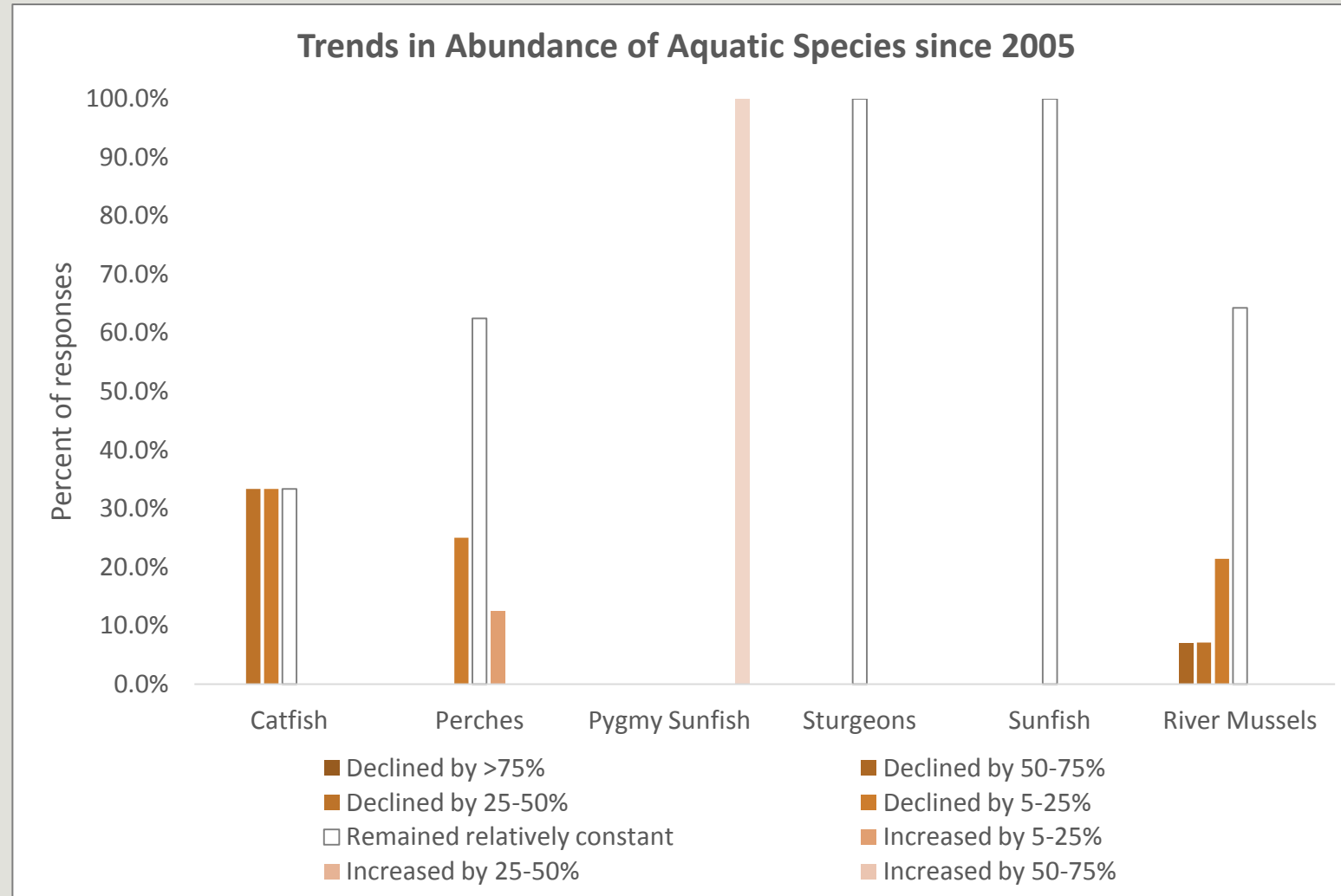
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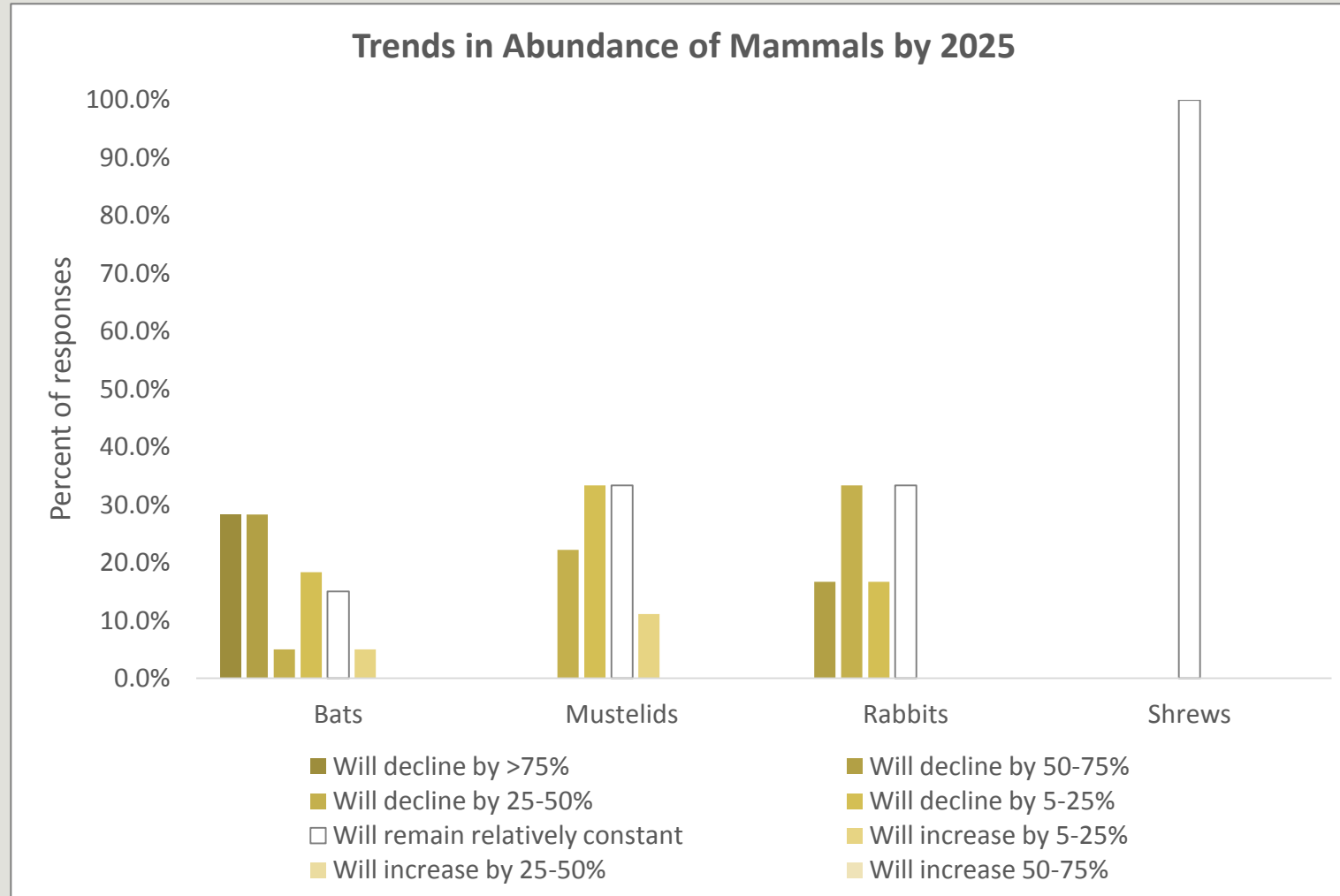
Survey Results: Future Trends in Abundance

Goal: Determine which species are most likely to decline or increase while the 2015 SWAP is in place, and get an overall sense of how SGCN can be expected to do over the next decade if actions are not taken.

Question: How would you predict the abundance of [species] in Indiana to change **over the next 10 years**, if current conditions and practices prevail?

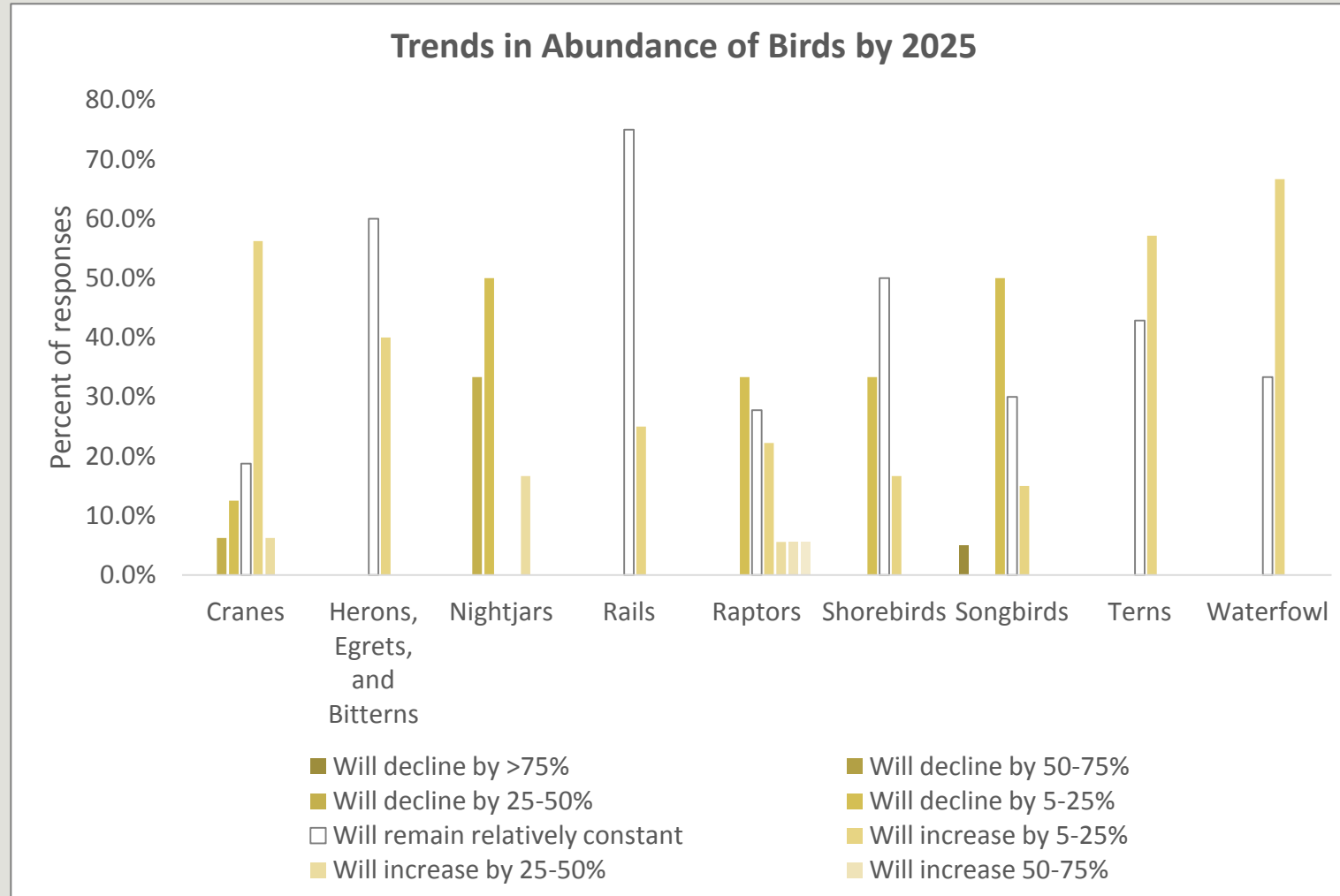
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Predict the change in abundance of SGCN in Indiana over the next 10 years, if current conditions and practices prevail.



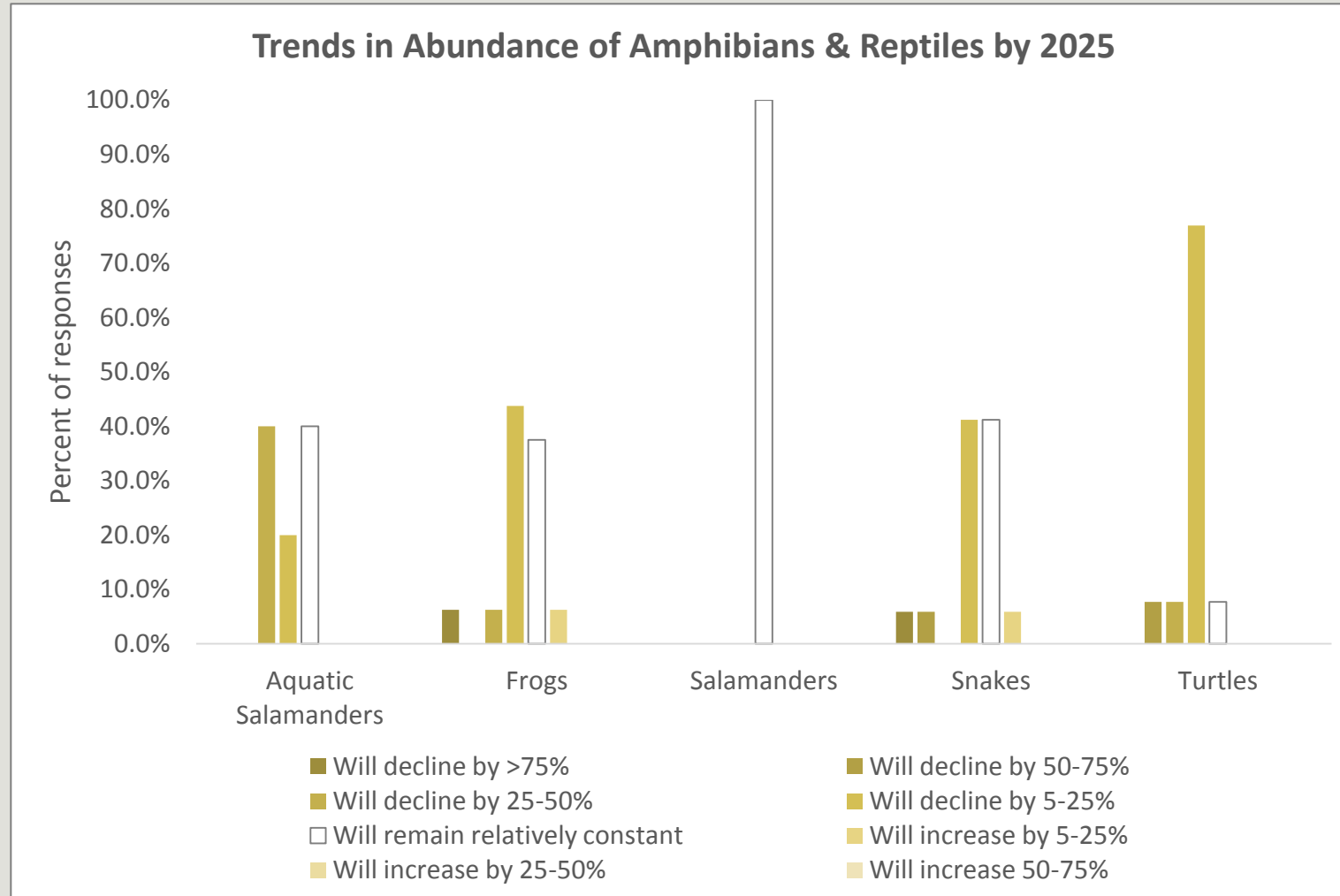
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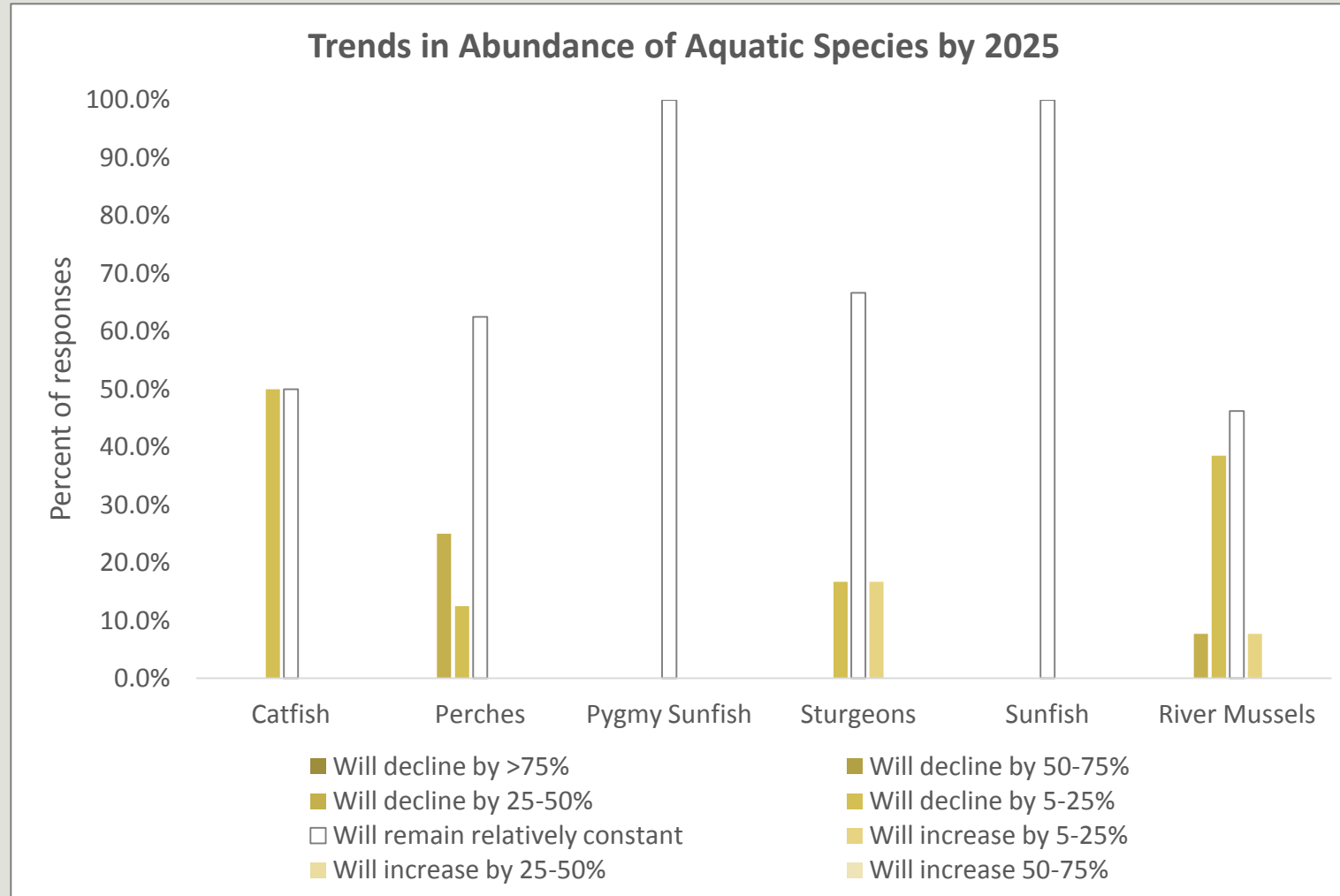
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Survey Results: Trends in Abundance

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Summary: Trends in Abundance

Species in serious/dramatic decline since 2005:

- Hellbender
- Cottonmouth
- Eastern whip-poor-will
- Loggerhead shrike
- Little brown myotis
- Northern long-eared myotis
- Tri-colored bat (eastern pipistrelle)
- Round hickorynut mussel

Species expected to seriously decline by 2025, if current conditions & practices prevail:

- Hellbender
- Cottonmouth
- Loggerhead shrike
- Little brown myotis
- Northern long-eared myotis
- Indiana myotis
- Tri-colored bat (eastern pipistrelle)



Hellbender, cottonmouth, whip-poor-will, loggerhead shrike, Indiana bat. Credits: Rod Williams Lab, USFWS, Paul Cools , John Maxwell, Justin Boyles

Summary: Trends in Abundance

Species that have greatly/dramatically increased since 2005:

- Whooping crane
- Bald eagle
- Osprey
- Trumpeter swan

Species expected to greatly/dramatically increase by 2025, if current conditions & practices prevail:

- Bald eagle
- Osprey



Whooping cranes, bald eagle, osprey, trumpeter swan. Credits: IDNR/USFS

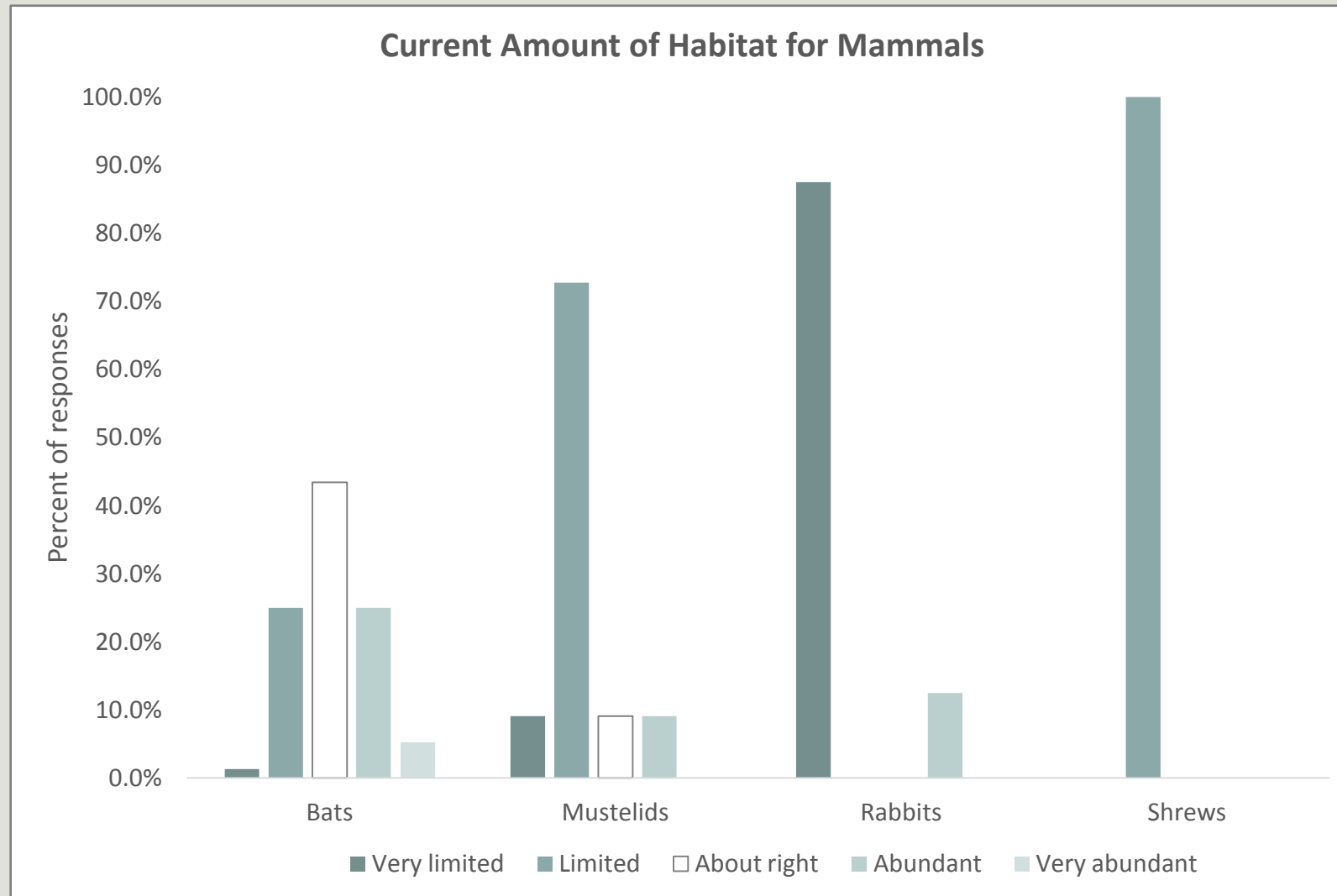
Survey Results: Current Habitat Conditions

Goal: Understand current habitat conditions for SGCN in terms of both quantity and quality.

Question: How would you describe the **total amount** of habitat in Indiana available to [species]?

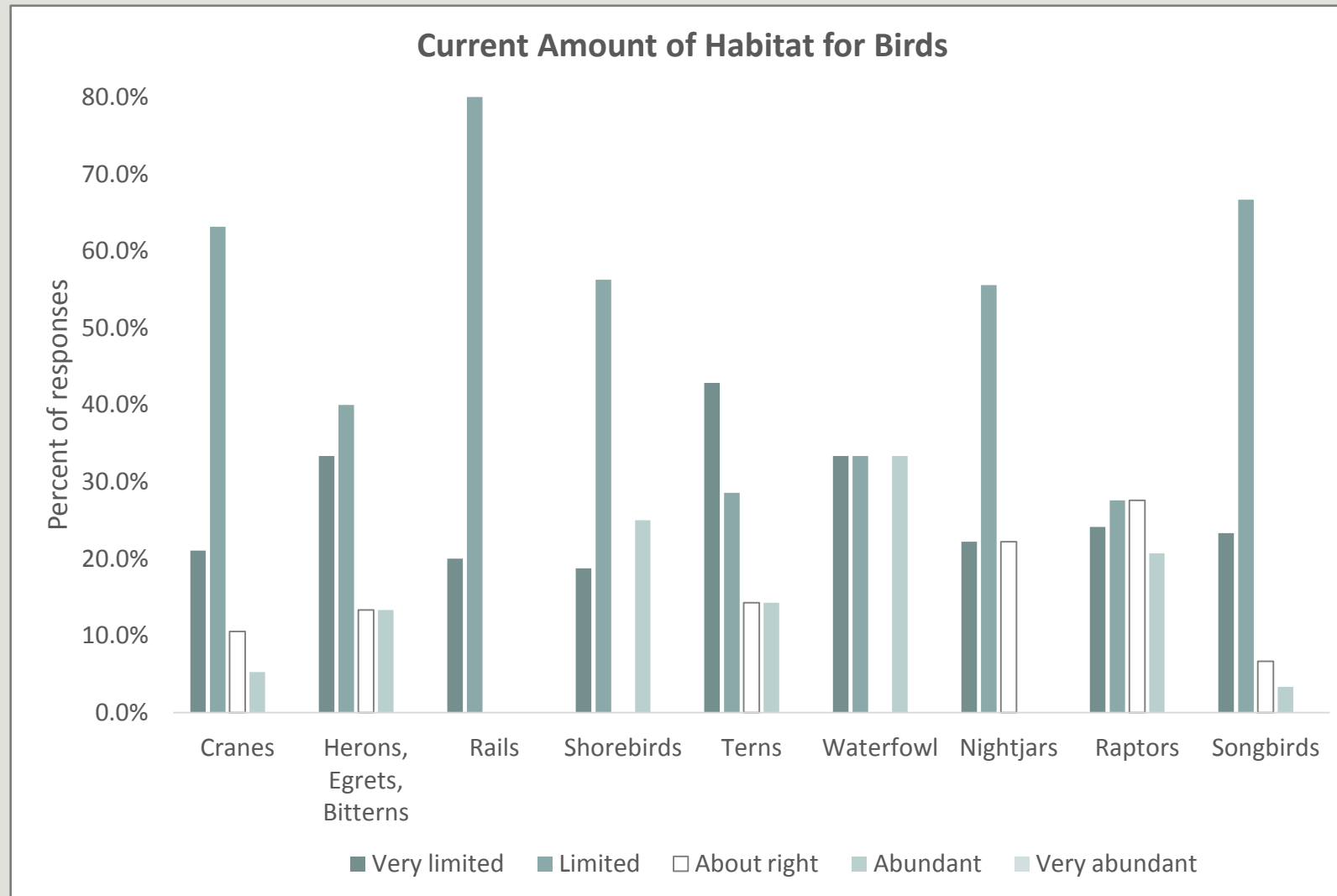
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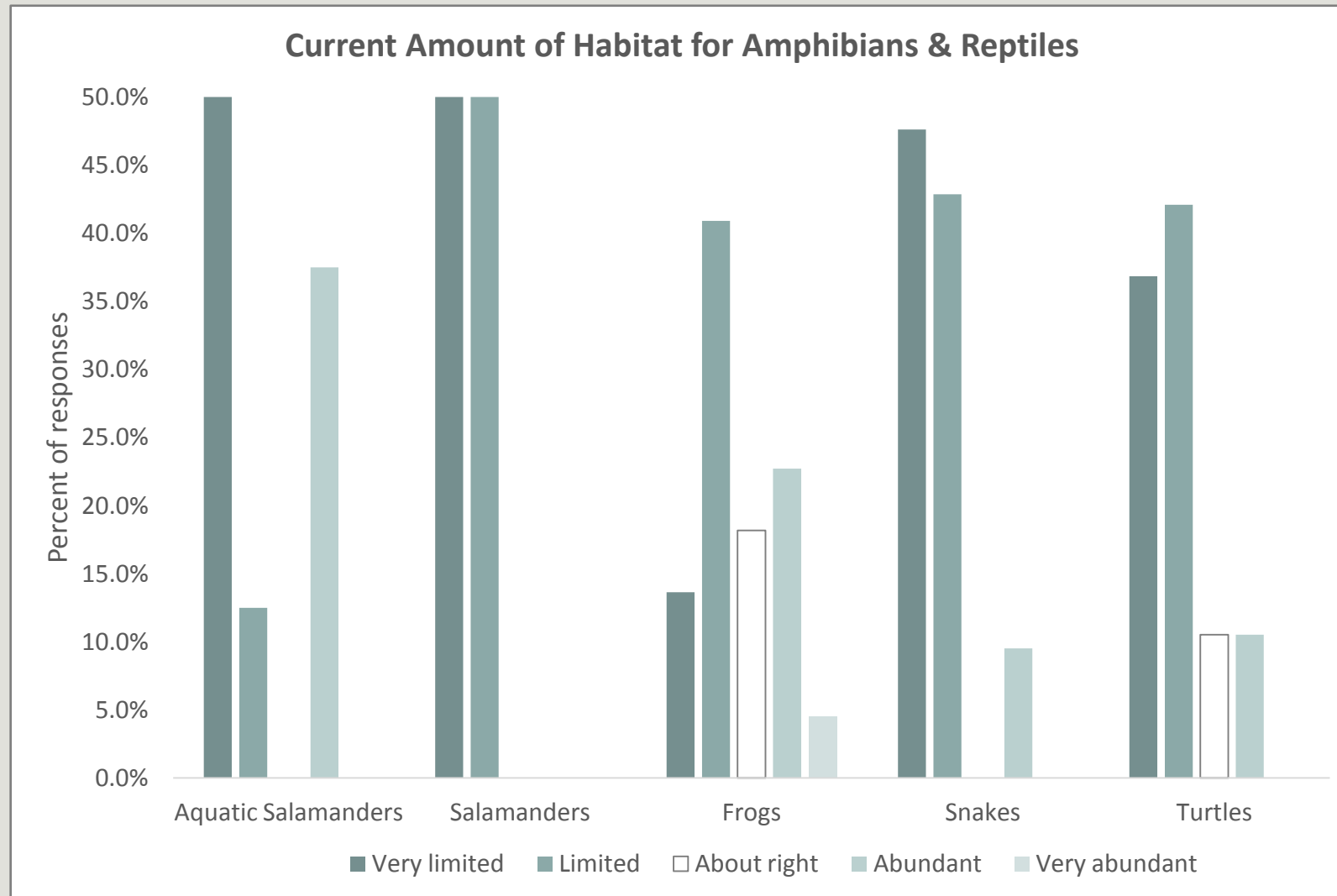
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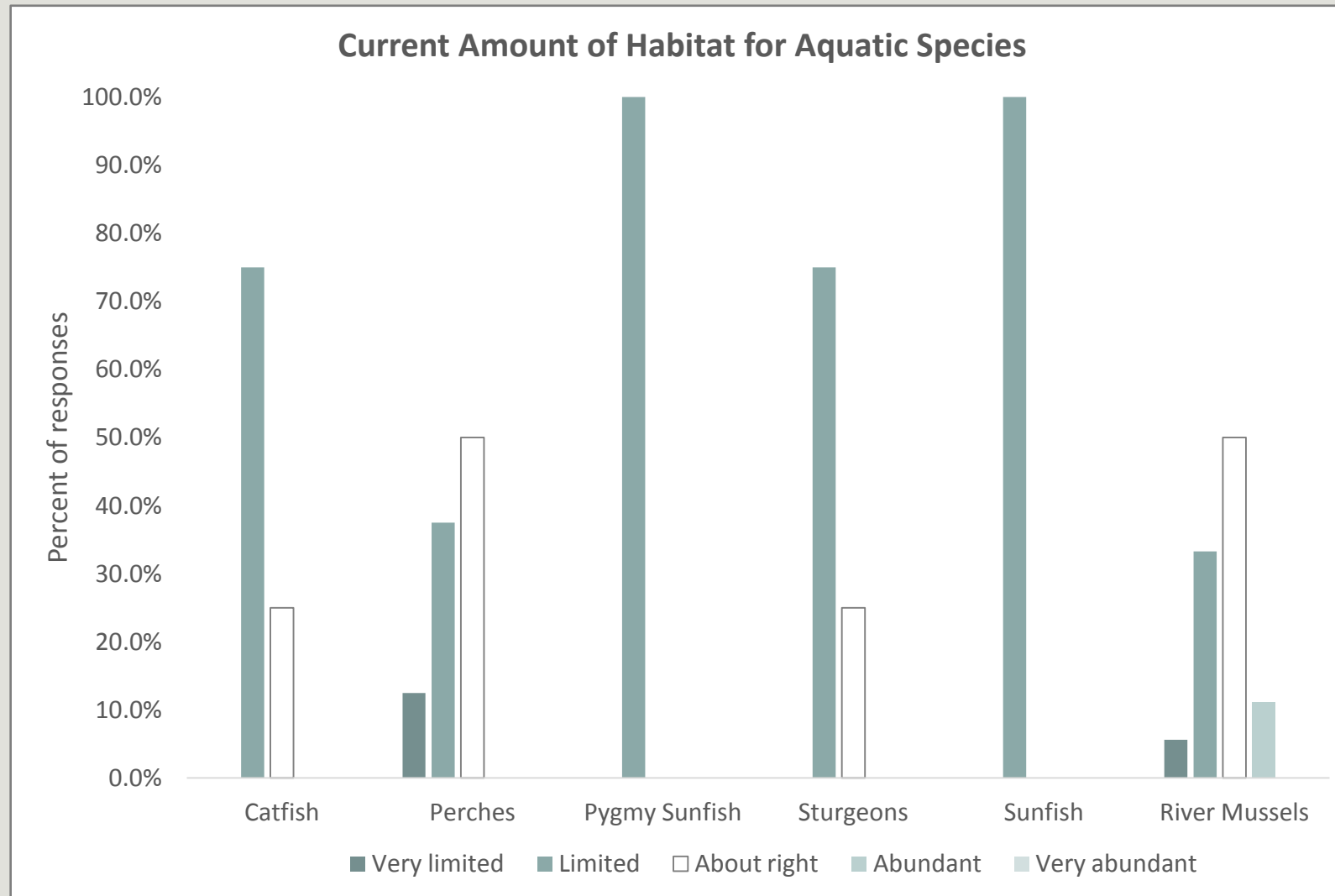
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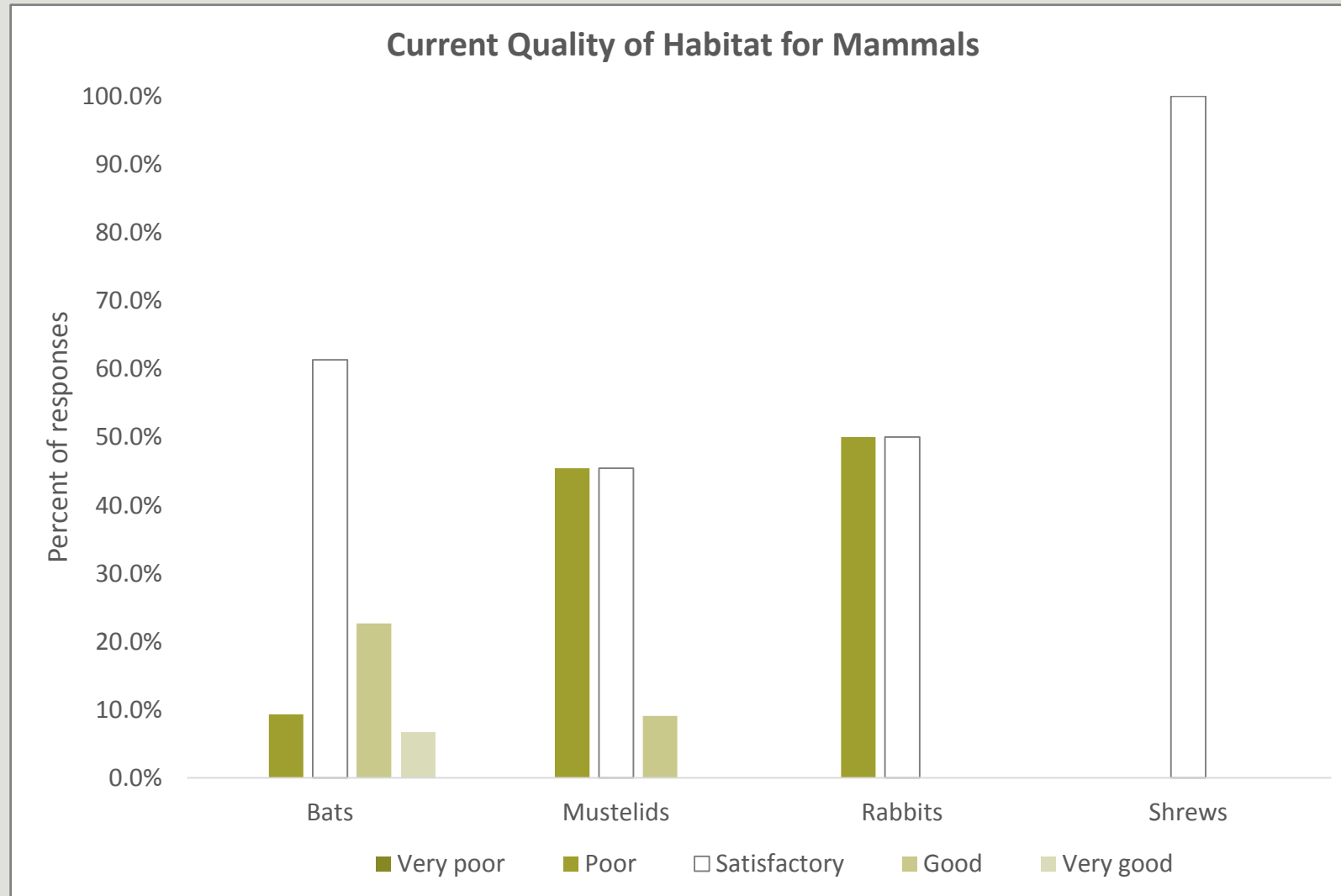
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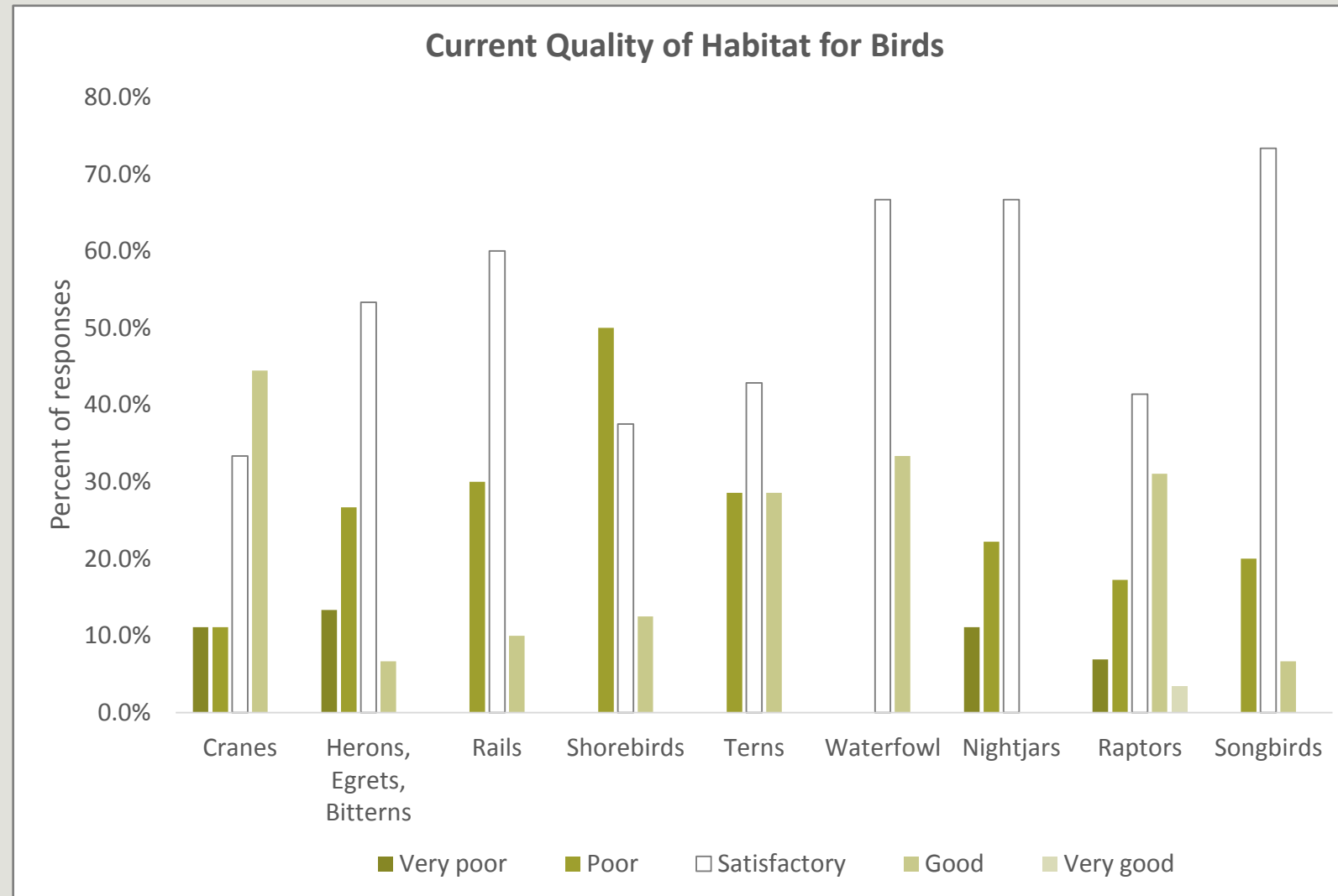
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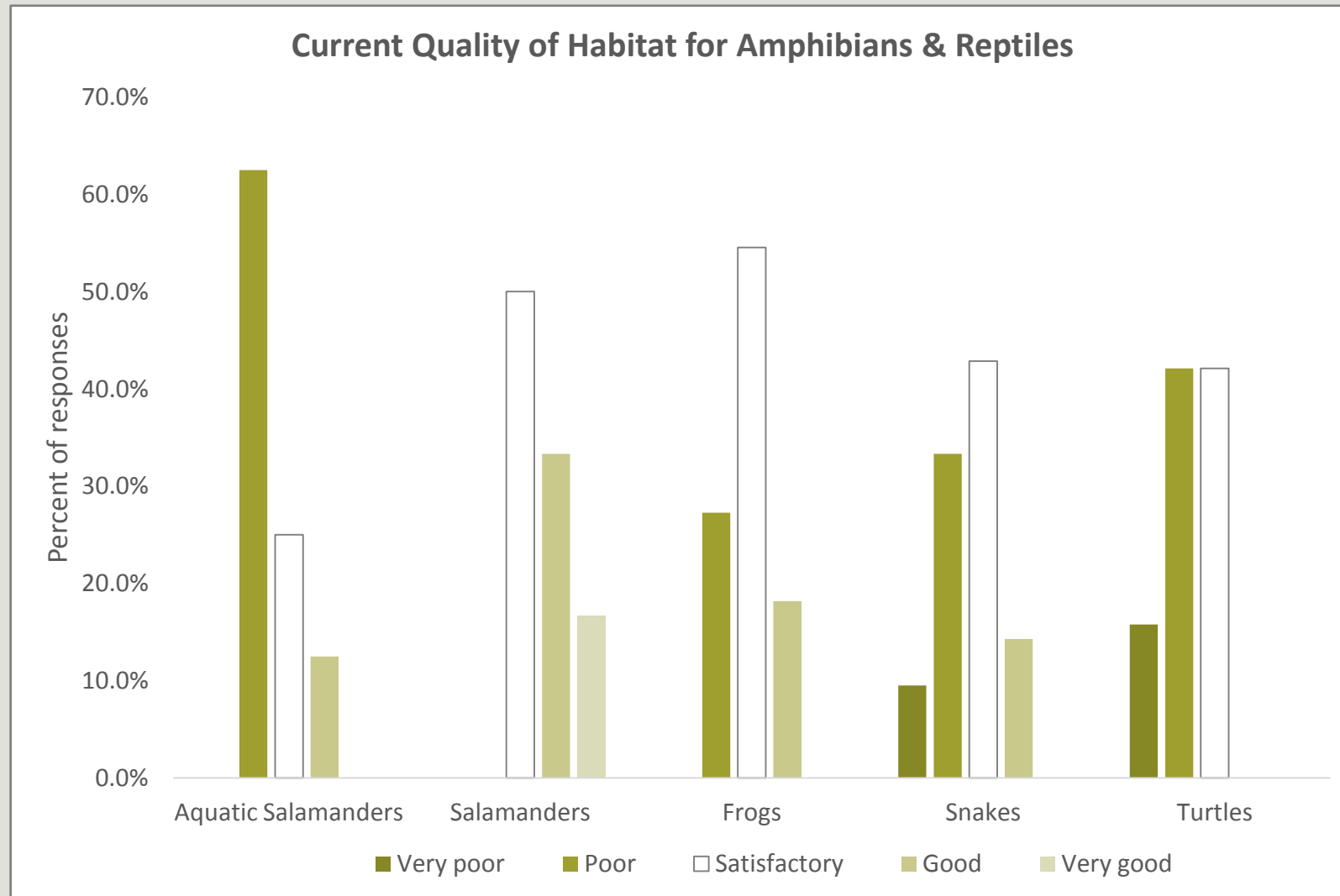
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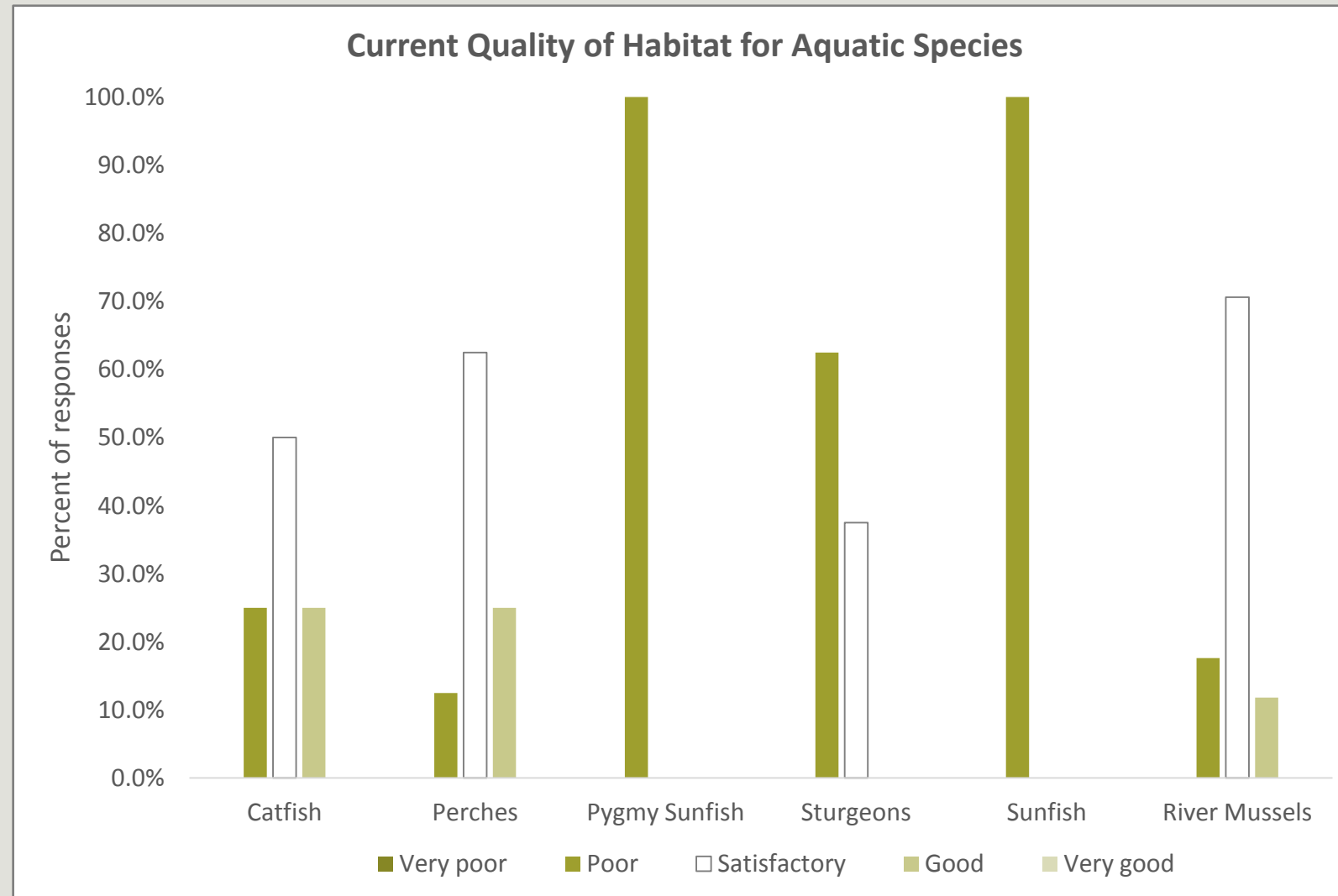
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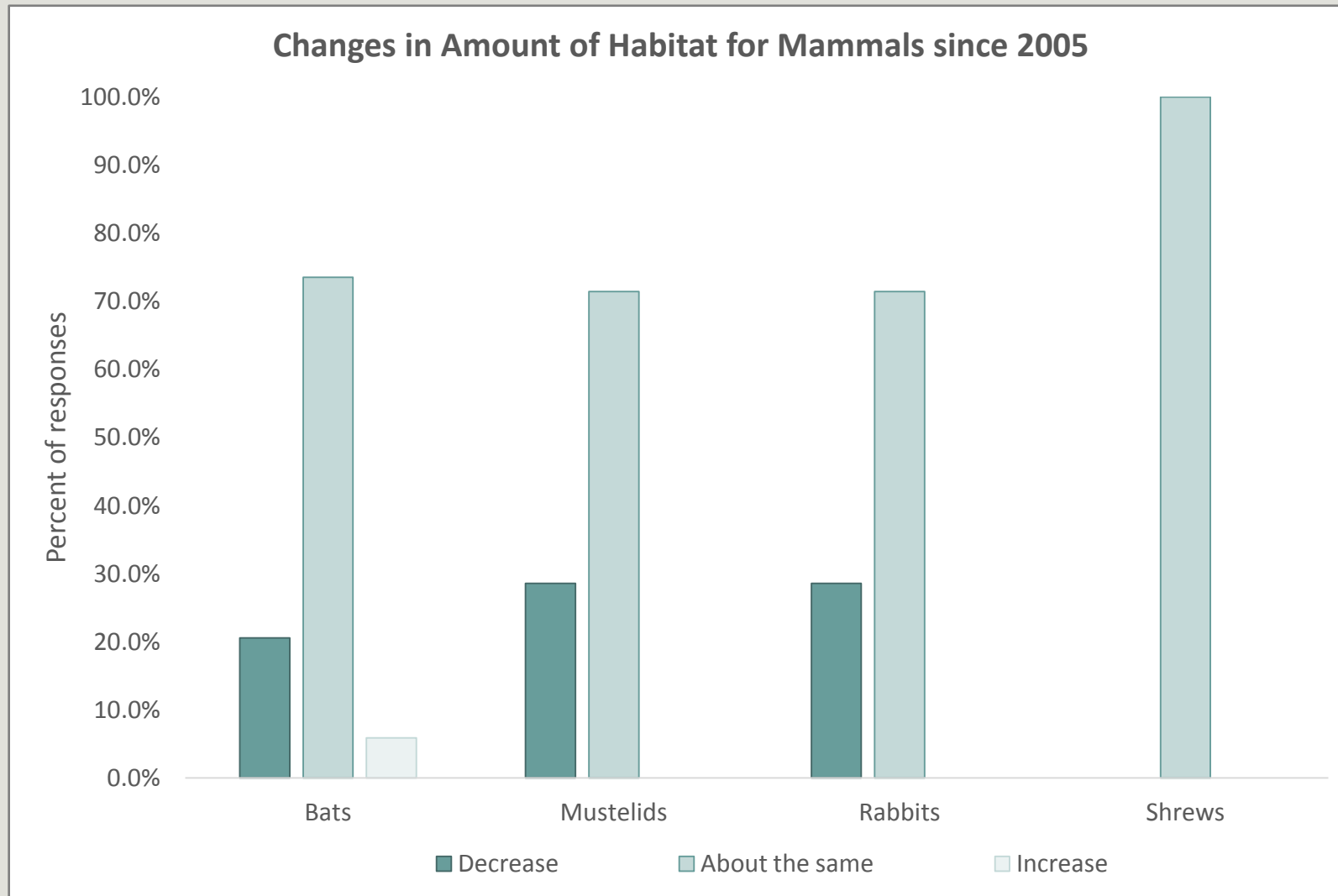
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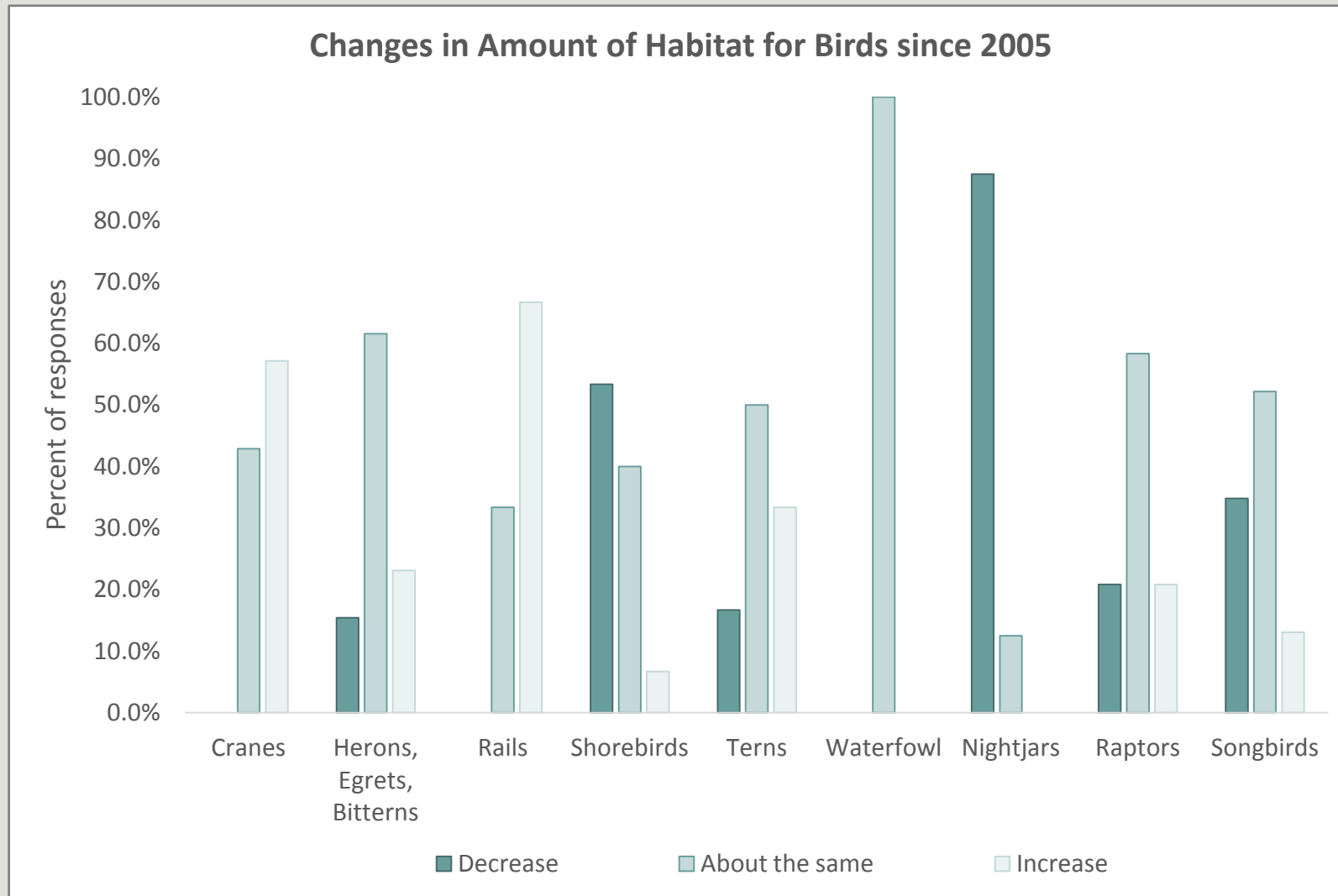
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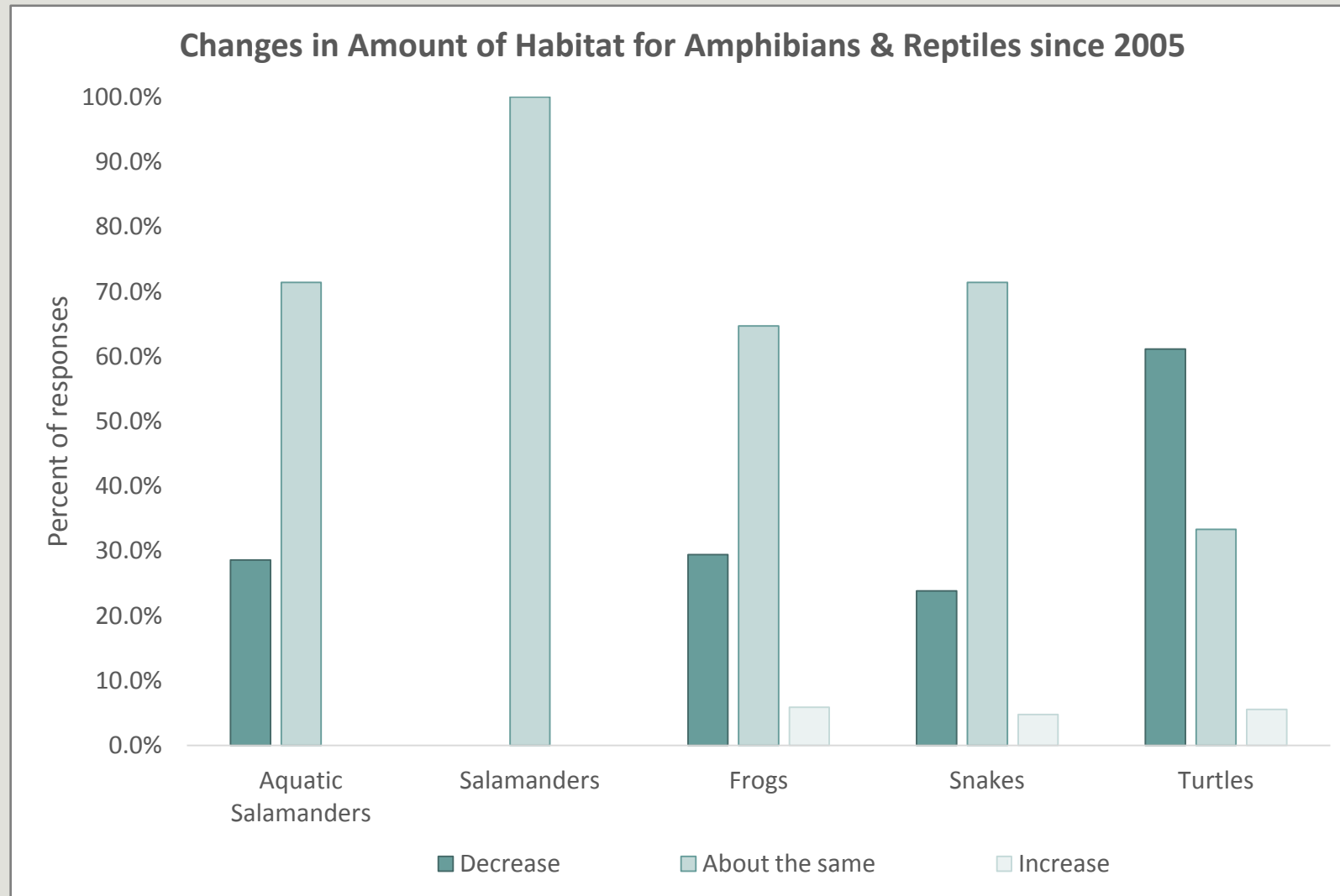
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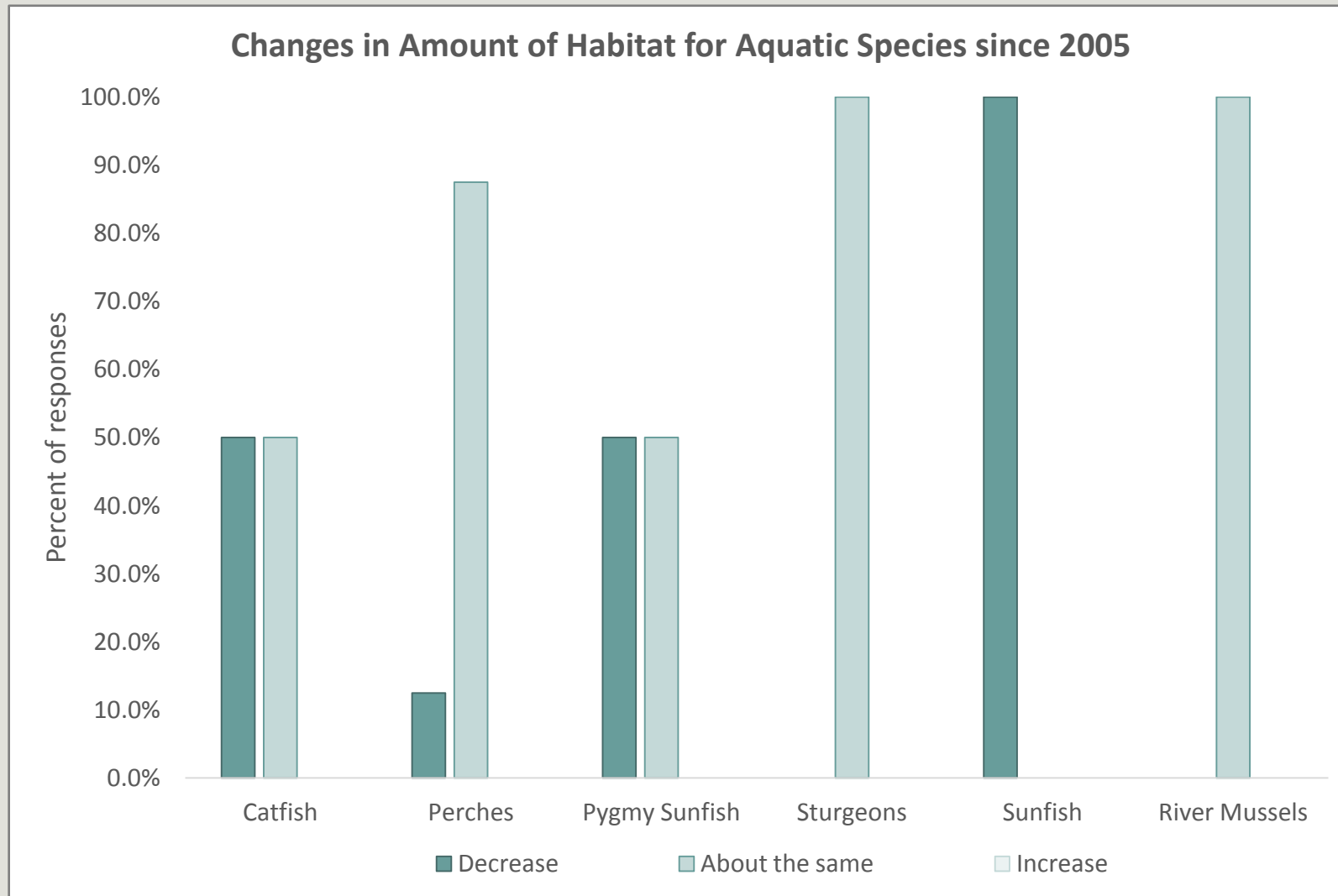
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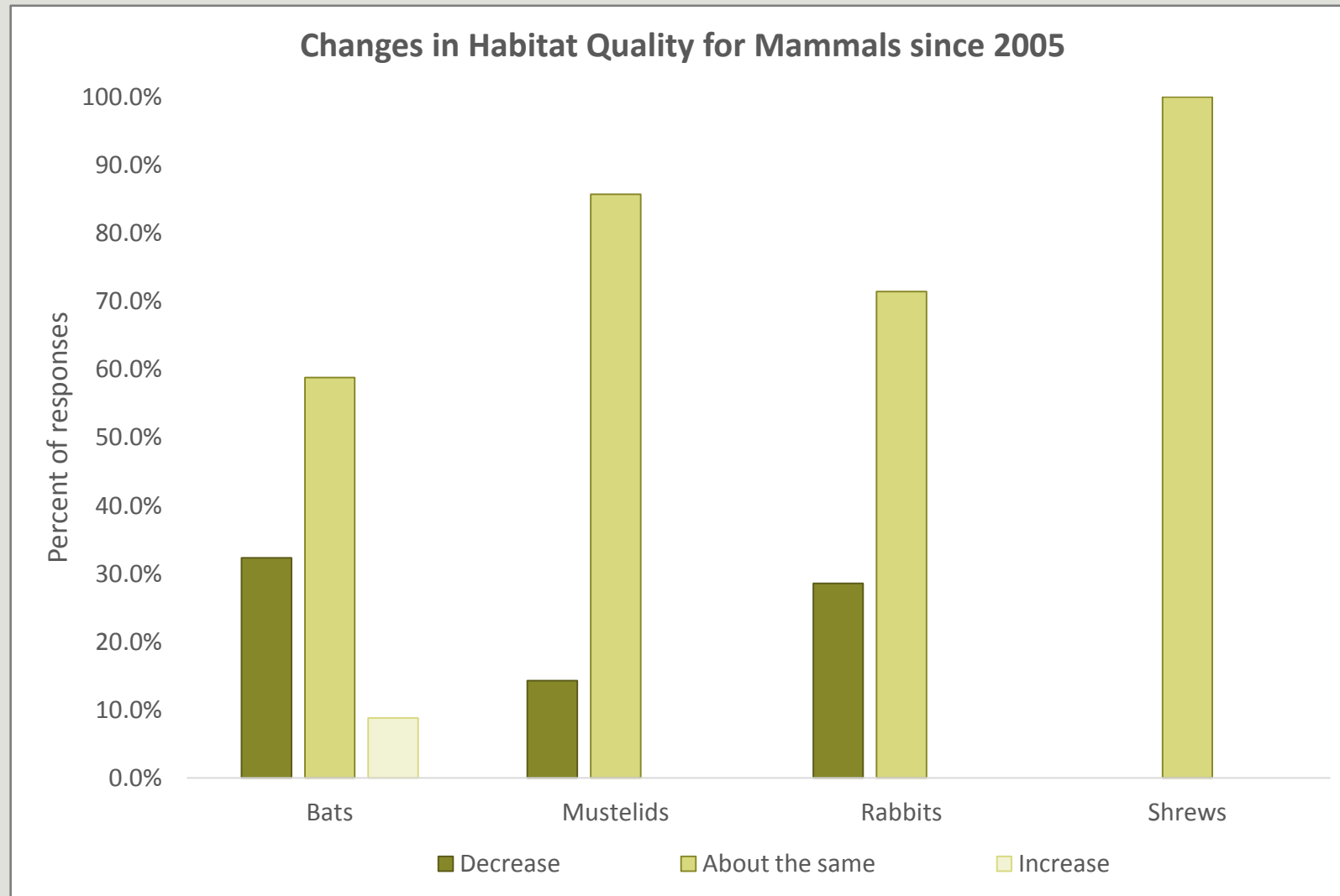
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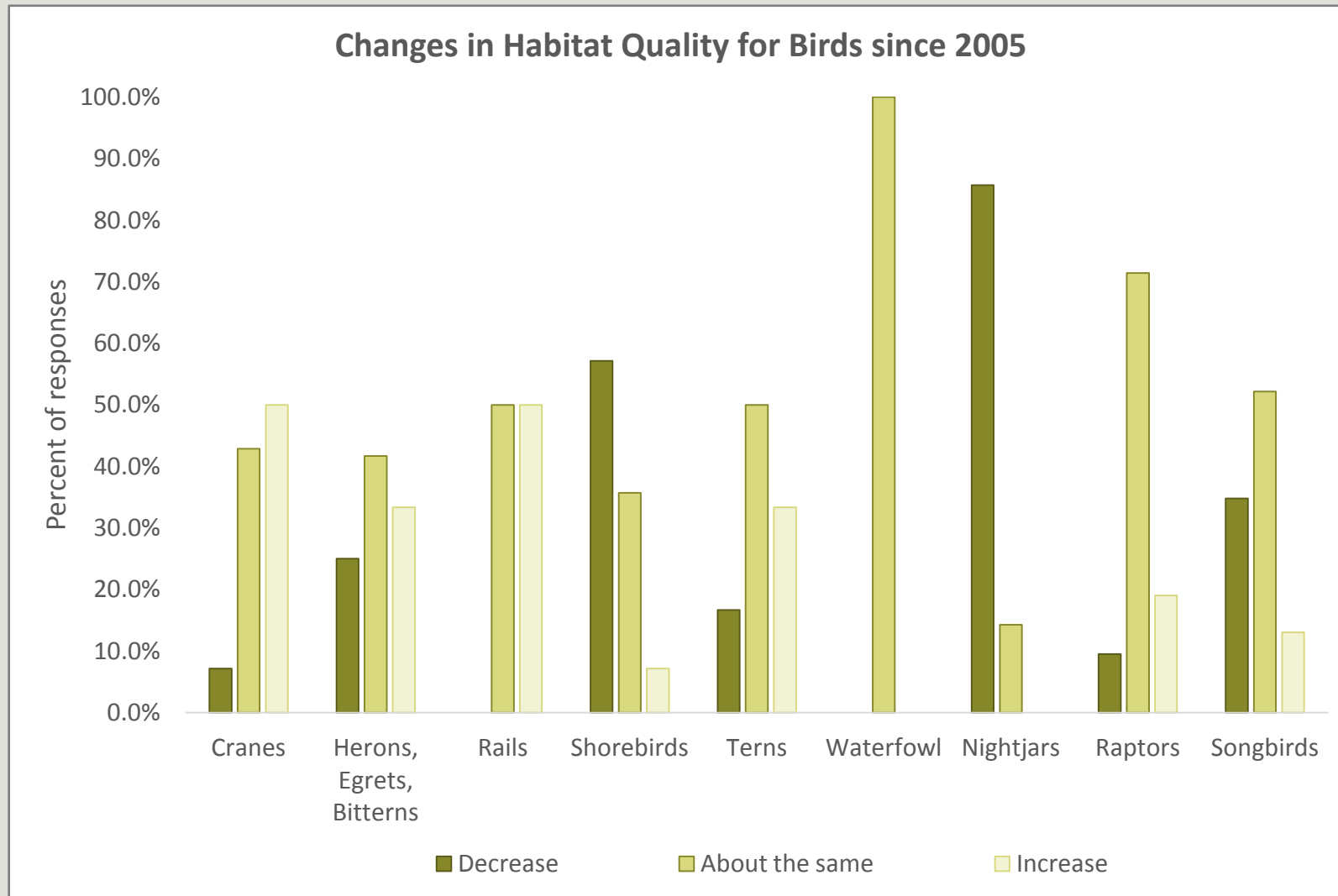
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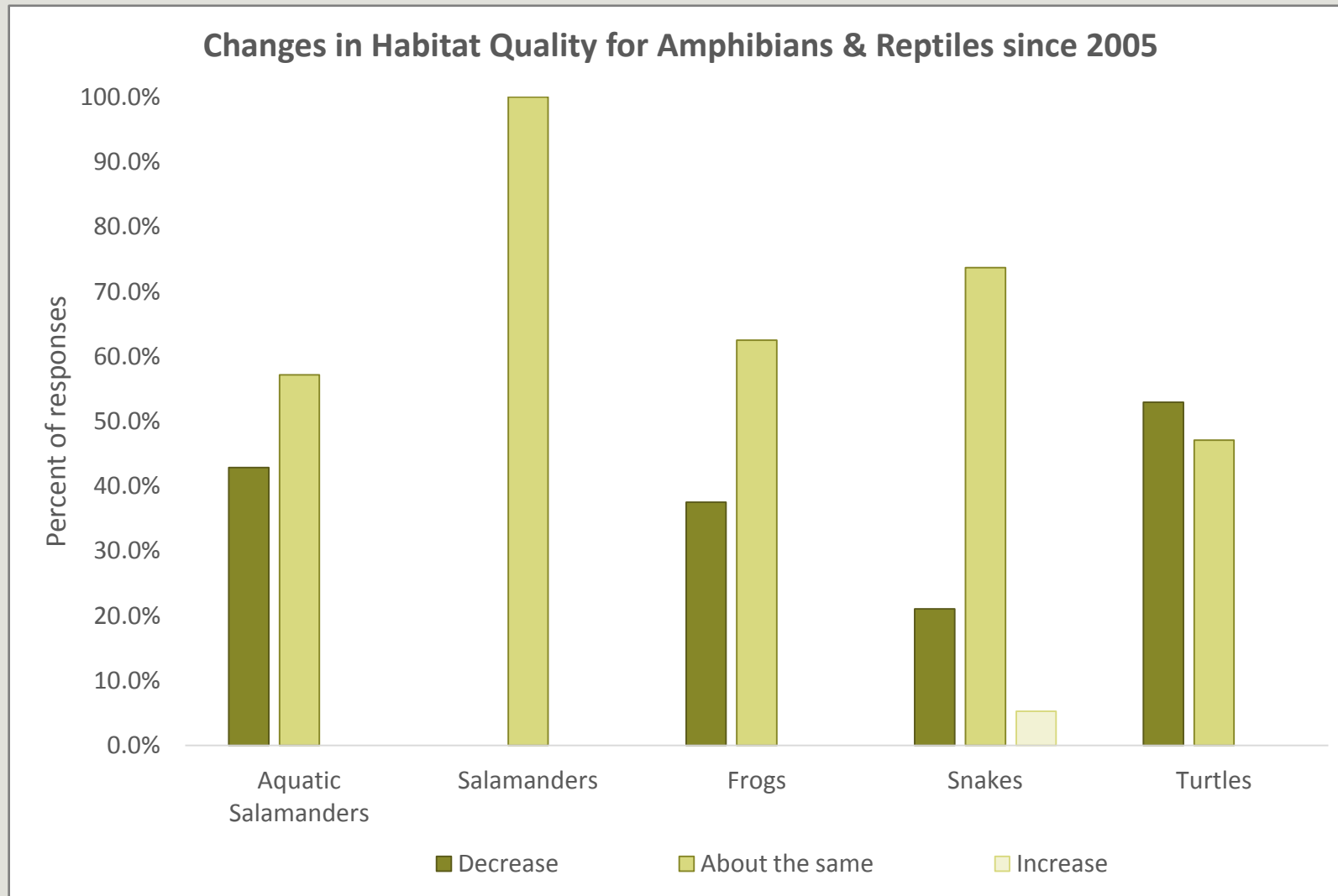
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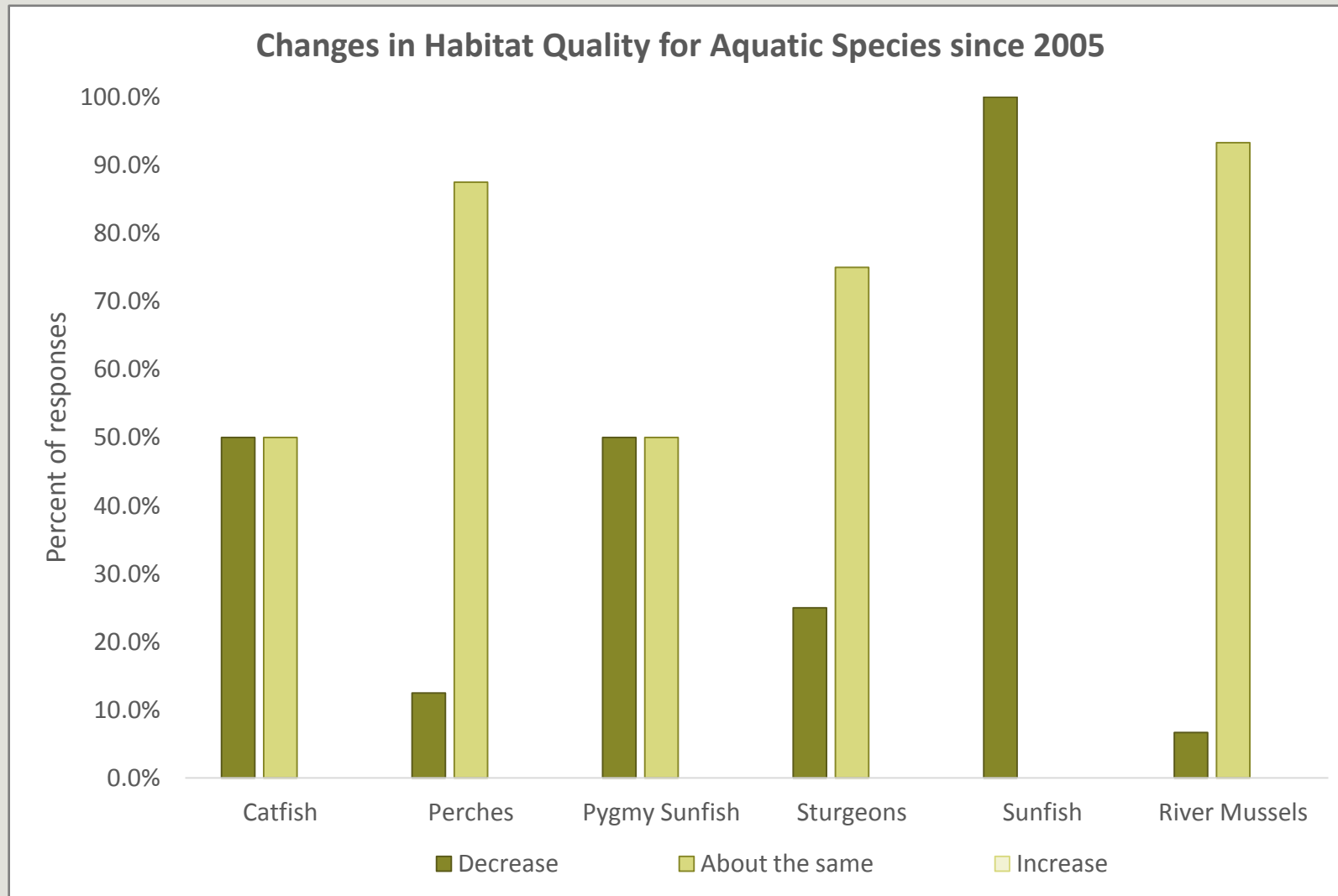
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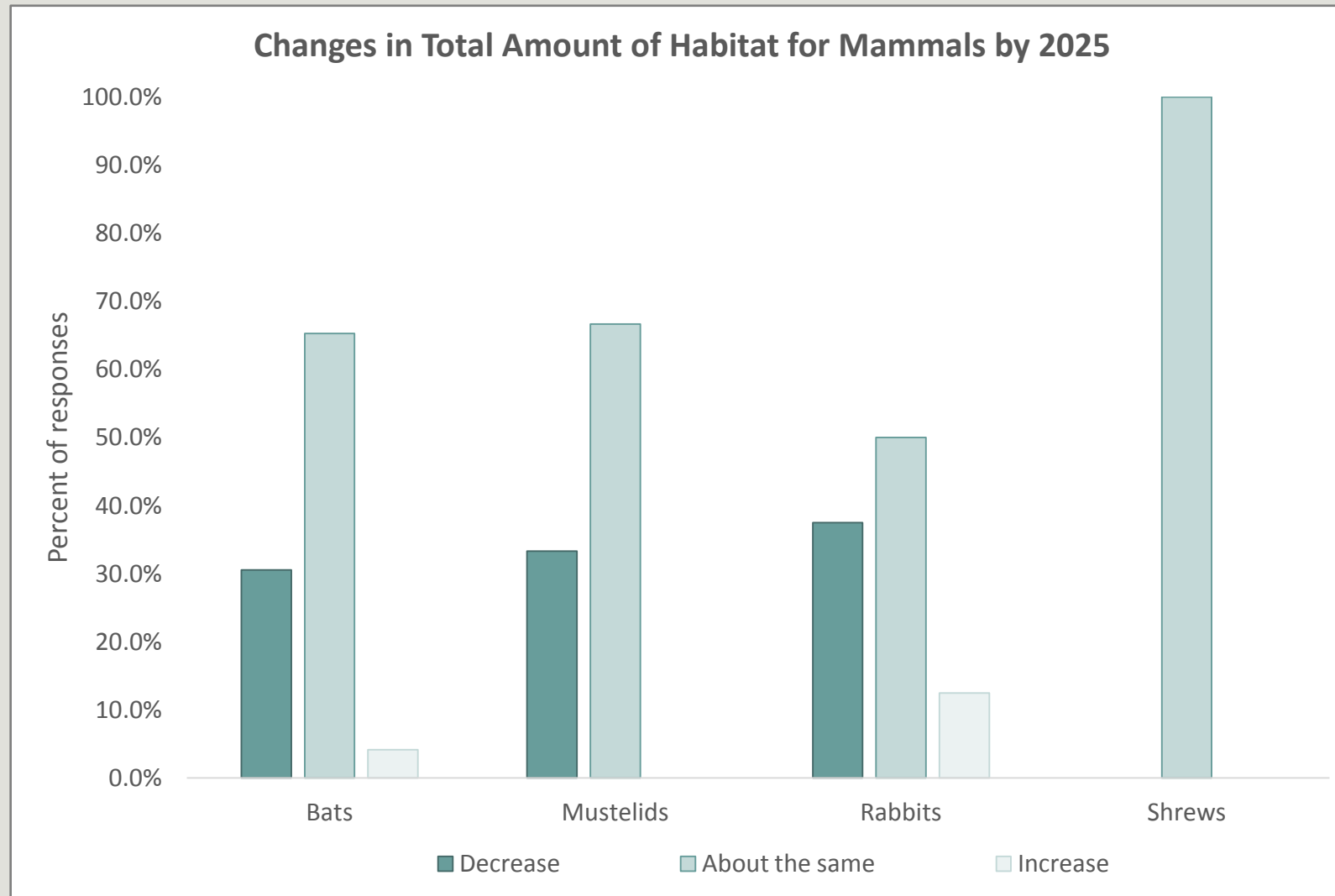
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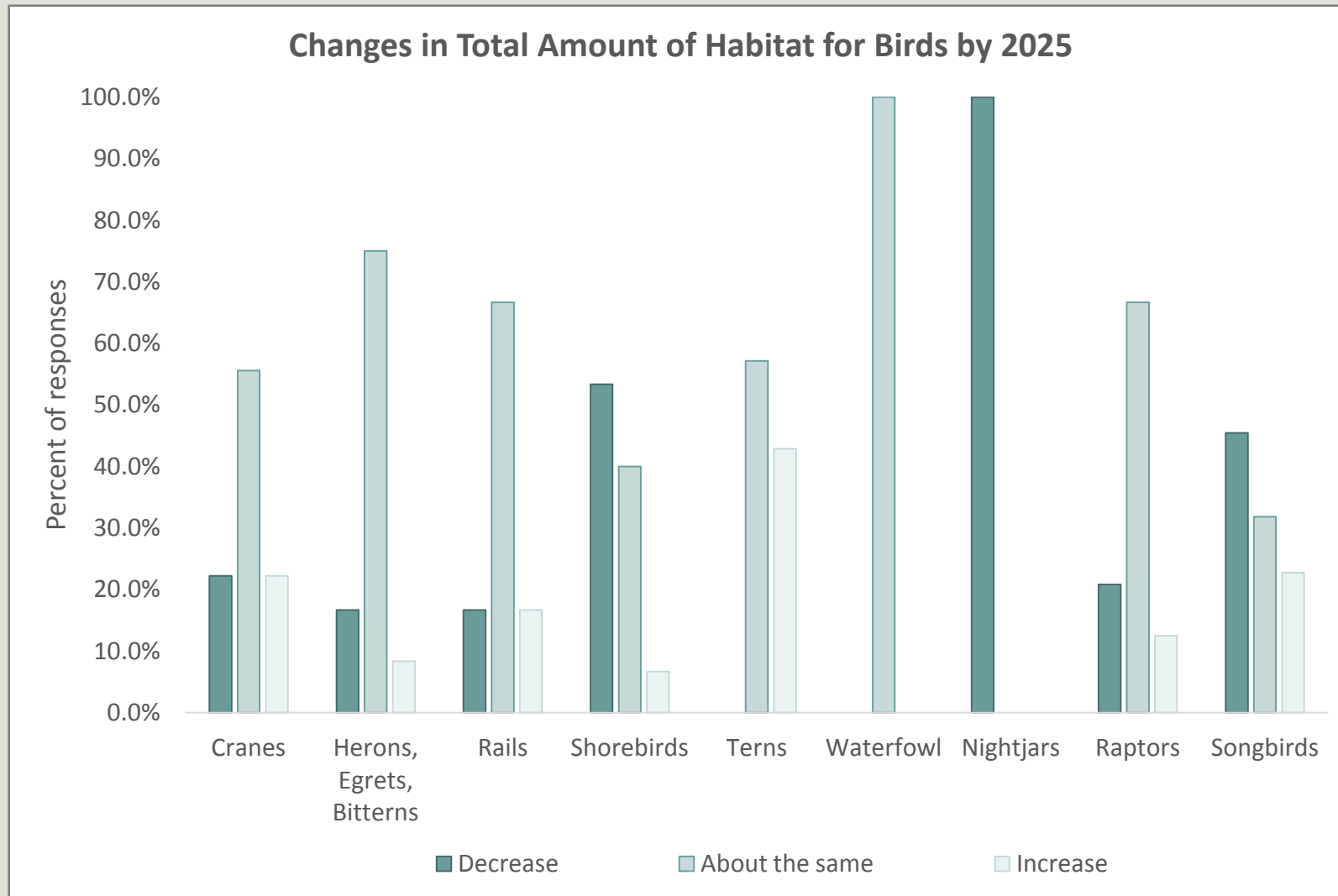
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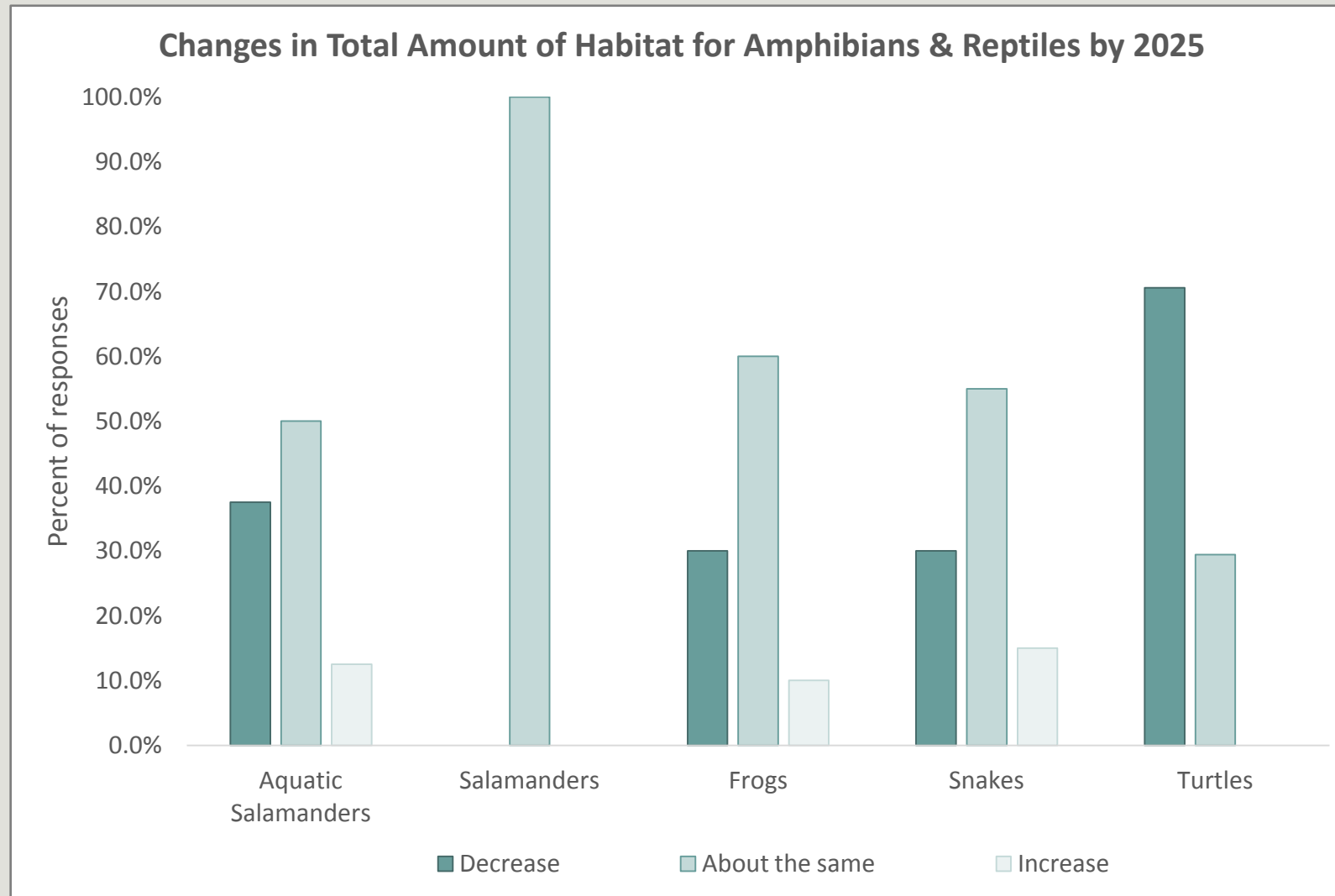
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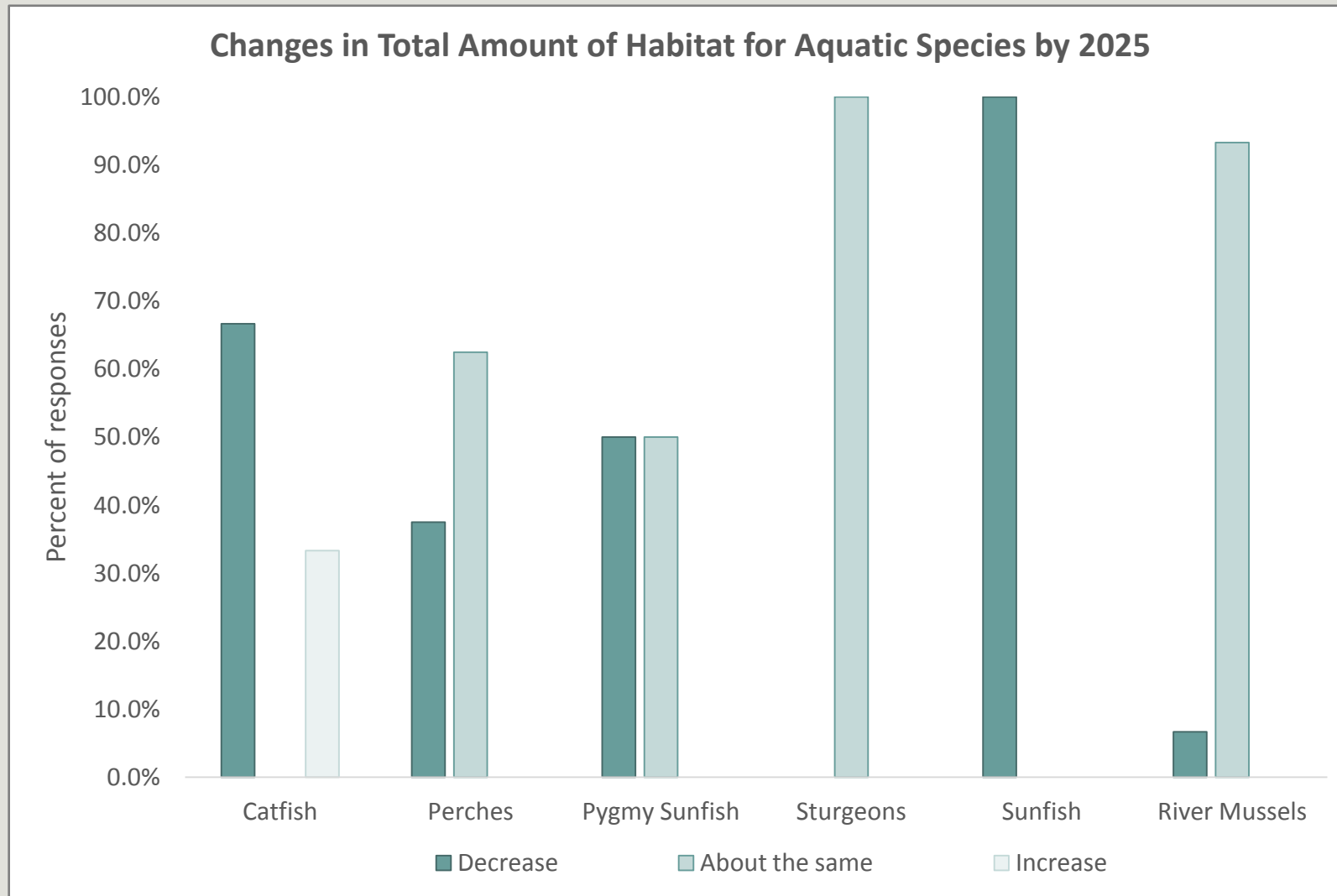
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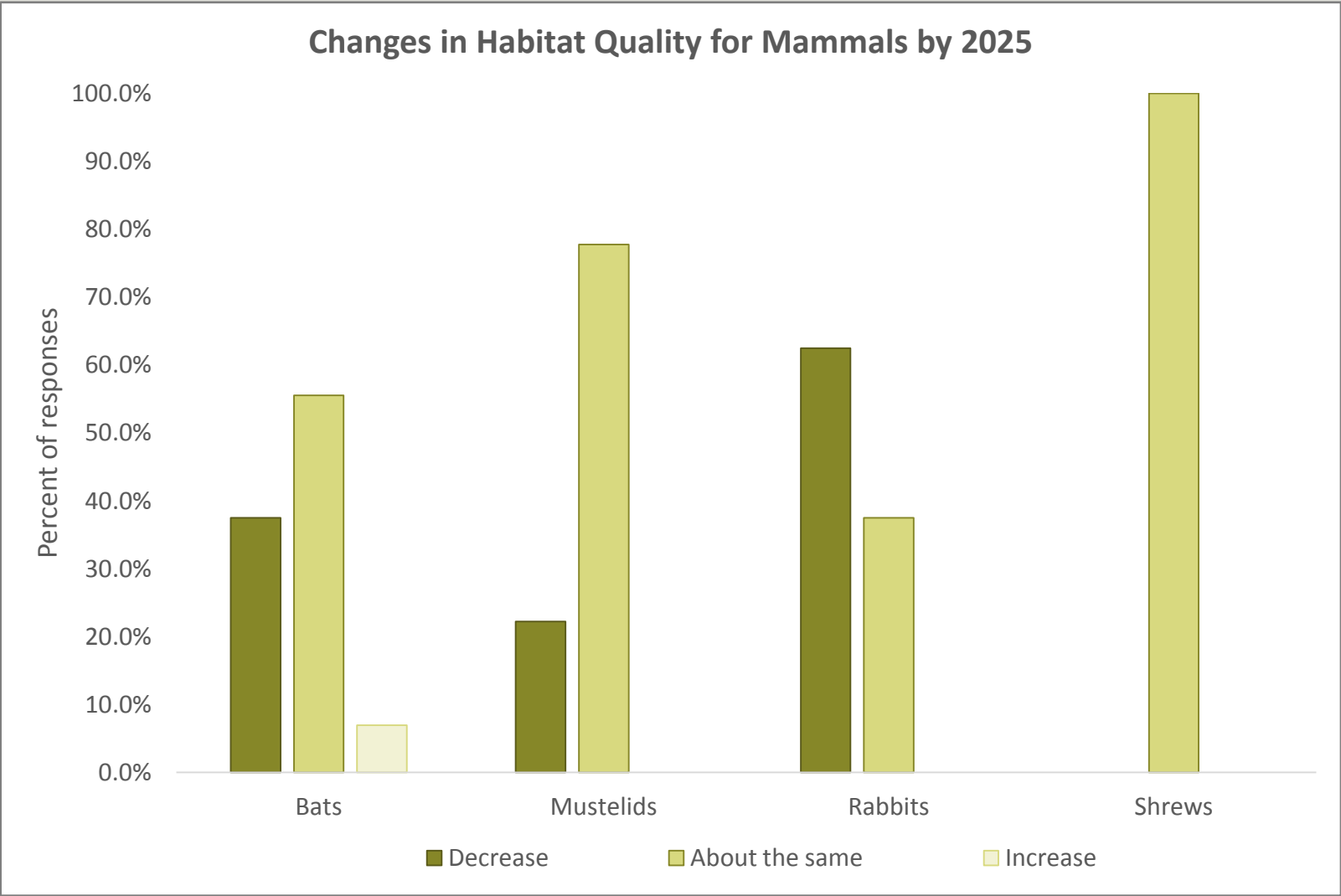
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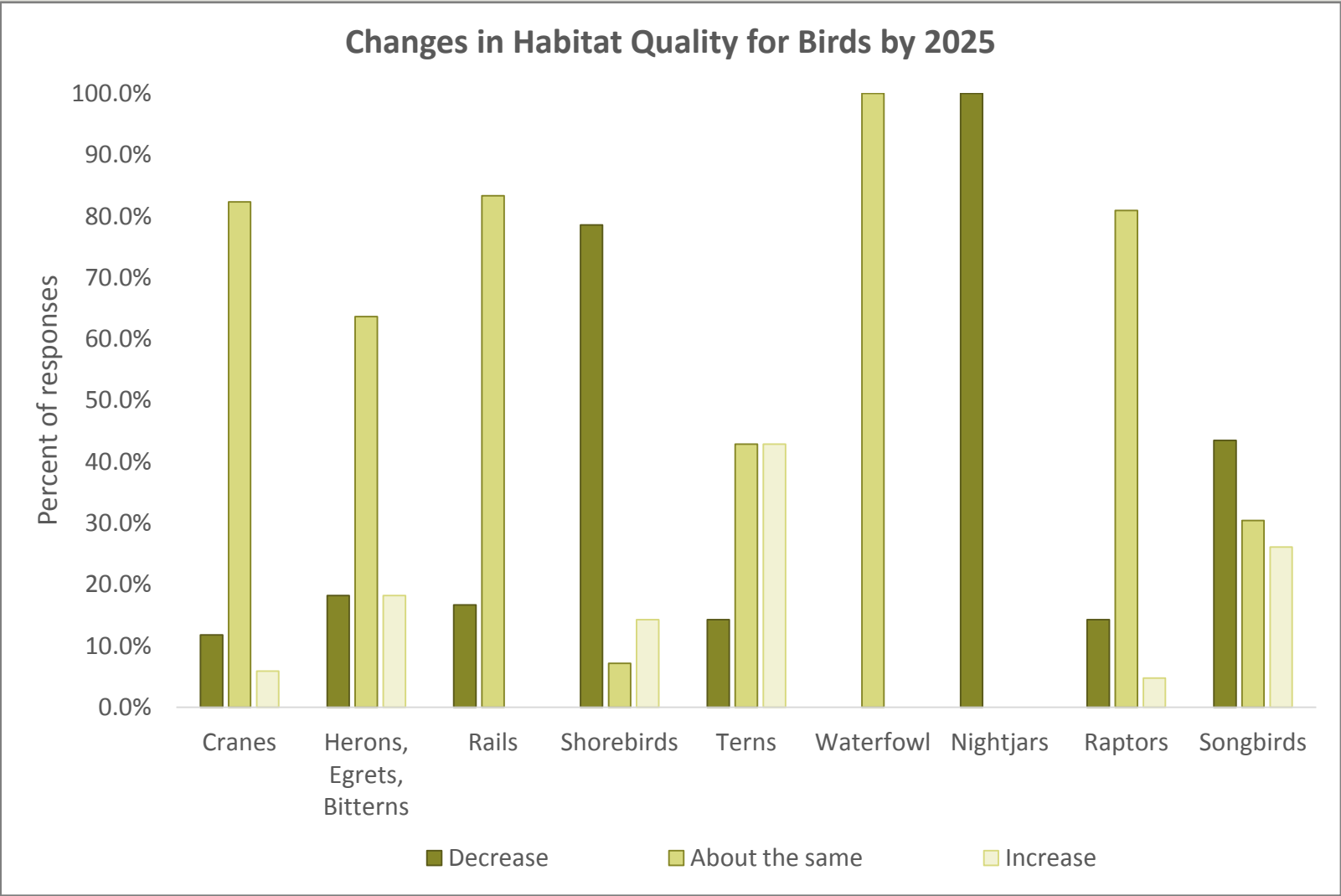
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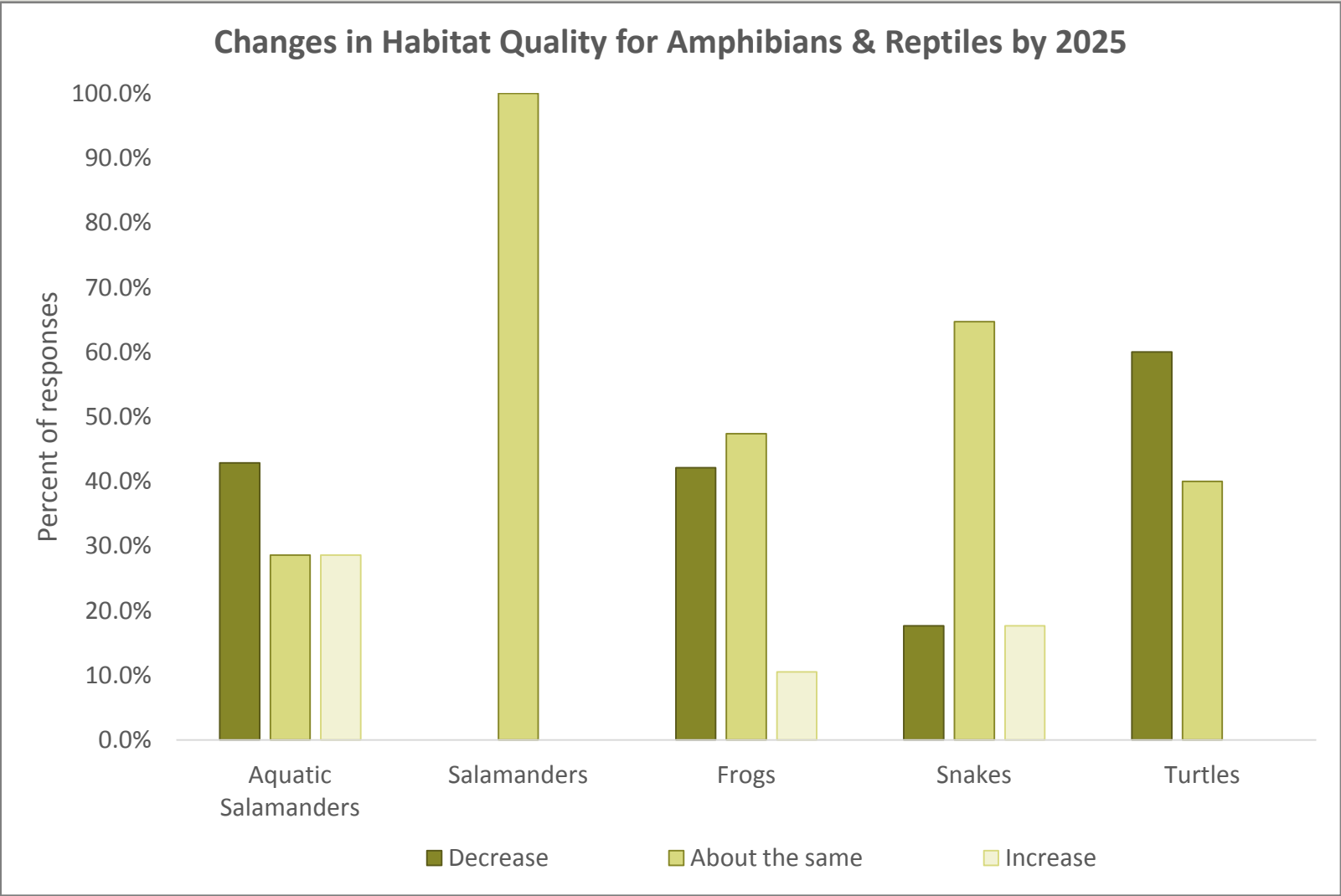
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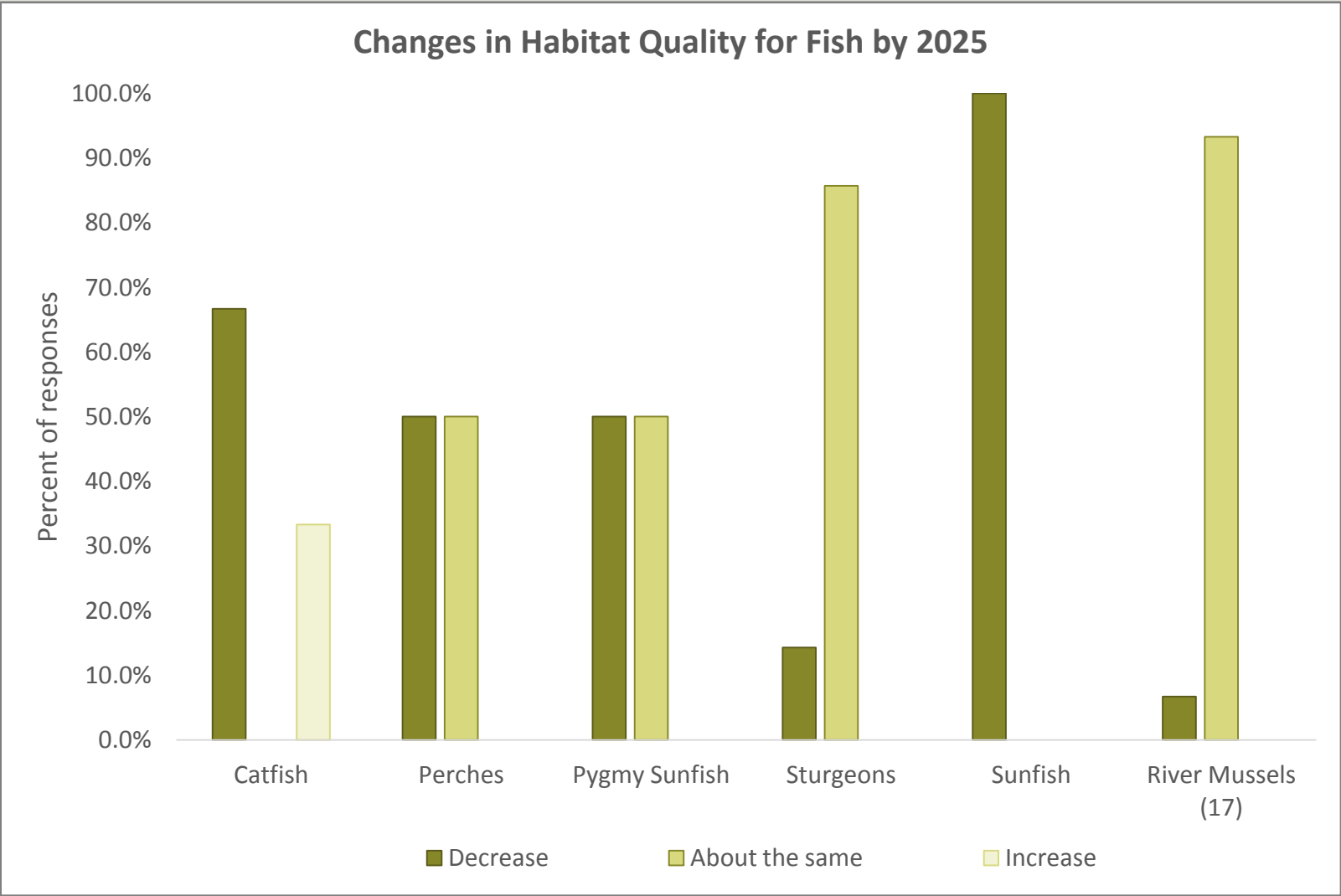
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Survey Results: Habitat Trends

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Habitat Suitability Modelling

USING THE BEST AVAILABLE SCIENCE TO INFORM
INDIANA'S SWAP

SWAP

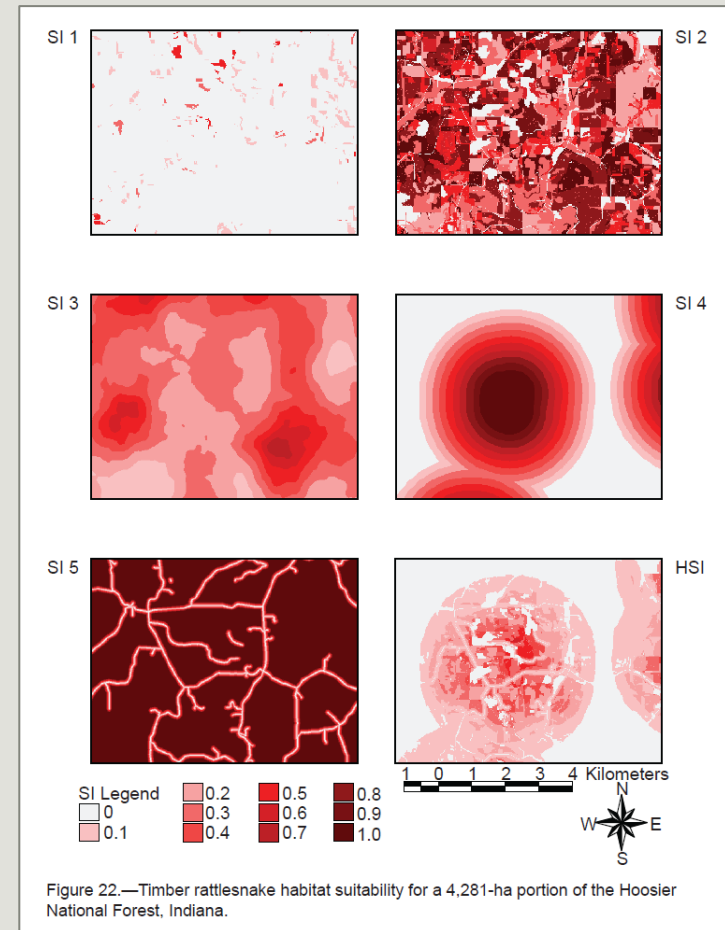
Conservation doesn't just happen. It requires resources and collaboration.

Landscape-level Habitat Modelling

Purpose

- Predictive tool to help us set priority actions
- Objective, quantitative metric
- Proof-of-concept for effectiveness of priority actions ranked in surveys

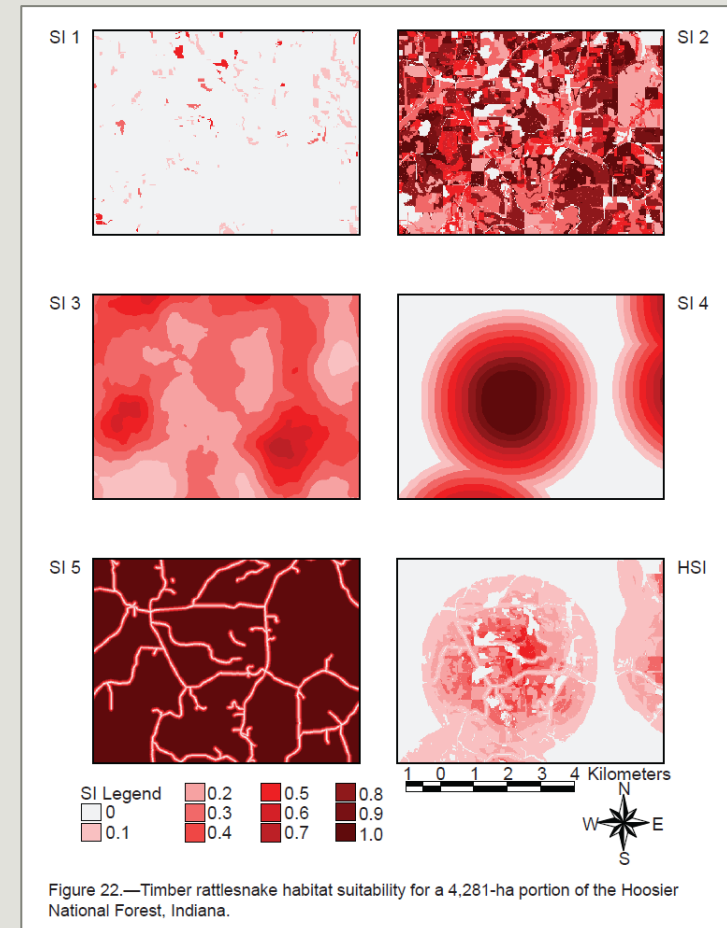
→ Timber rattlesnake landscape-level habitat suitability maps. Individual suitability indices contributed to the HSI: early successional forest and canopy gaps, woody debris (stand age), habitat composition, proximity to hibernacula, distance from roads (Rittenhouse *et al.* 2006).



Landscape-level Habitat Modelling

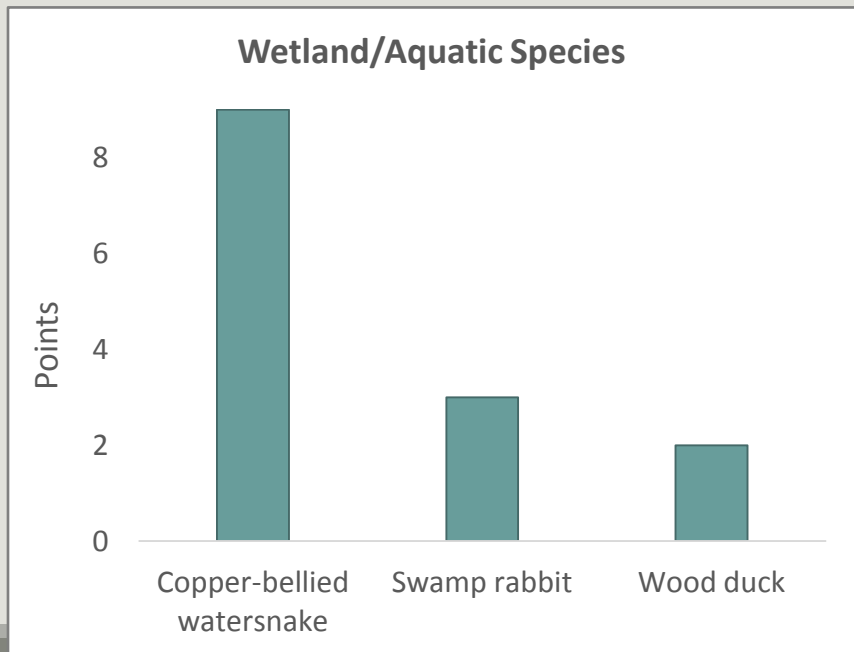
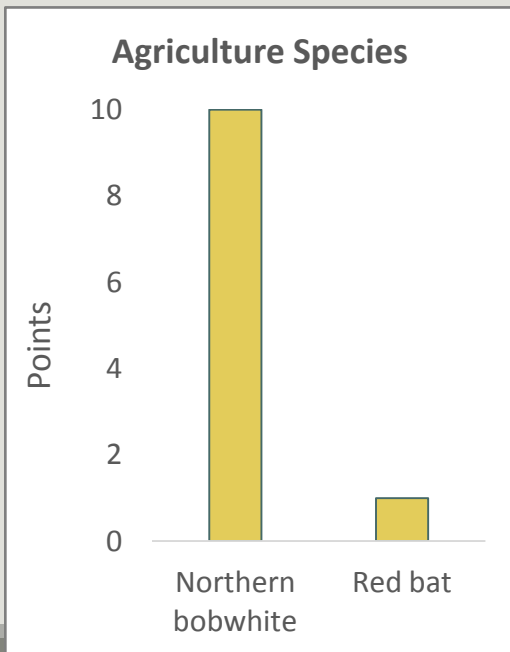
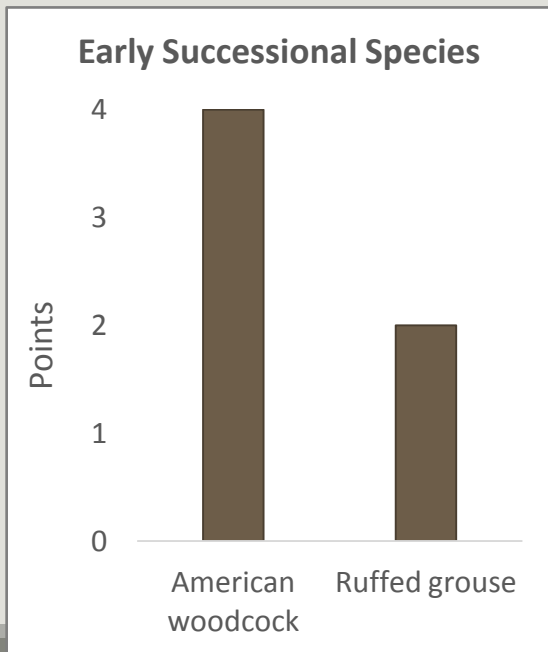
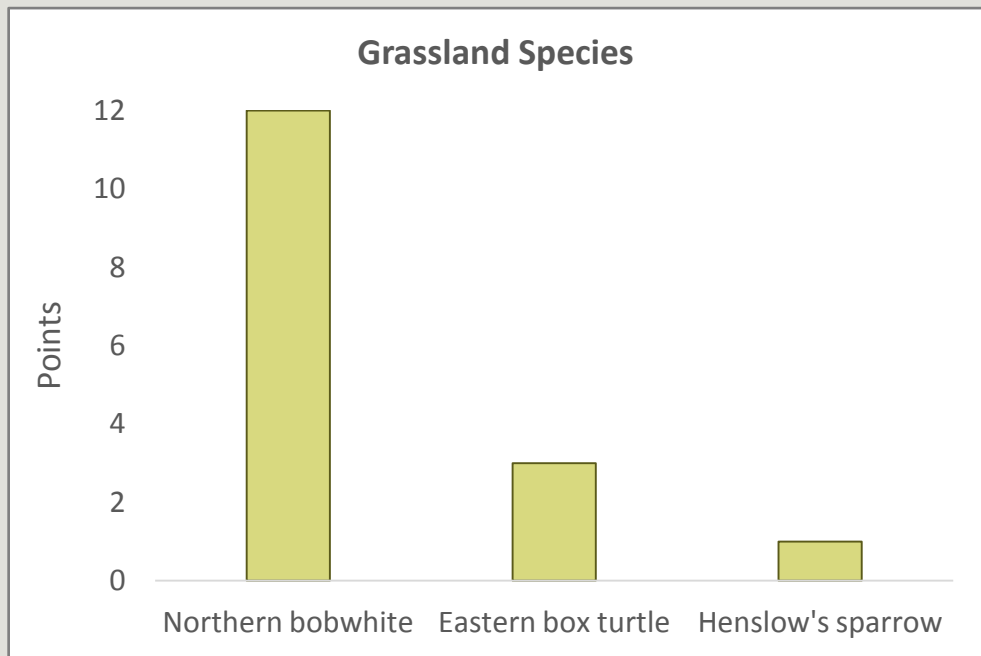
Process

- Implement models for suite of representative species (4-5) in each region in GIS environment
- Assess habitat suitability with current conditions
- Construct alternate landscape configurations representing possible outcome of actions
- Reapply models to future landscapes and assess how habitat suitability has changed
- Evaluate relative effectiveness of action scenarios
- Use results to inform prioritization of actions



Selection of Species for Modelling

1. Conducted focus group with ~20 species technical experts to produce initial list of options for each region
2. Species suggested were based on a set of criteria:
 - a. Actions on the ground make a difference in habitat quality for the species
 - b. Improved habitat quality for the species could represent improvement in habitat quality for a wide range of other species (umbrella effect)
 - c. Enough data available to build a model



Selection of Species for Modelling

3. Survey 1 respondents voted or suggested additional species
4. Ranked species by survey responses and selected final suite based on:
 - a. Best data availability for models
 - b. Representation of multiple taxa
 - c. Representation of all focal habitat types in each region
5. Final lists were reviewed by Core & Advisory Teams and IDNR wildlife diversity staff

Region 4 Modelling Species

Species	Taxon	Habitat Types
1. Northern bobwhite	Birds	Agriculture, grasslands
2. Cerulean warbler	Birds	Mature forest
3. Swamp rabbit	Mammals	Bottomland hardwood forest
4. Copper-bellied watersnake	Herps	Aquatic systems, wetlands
5. American woodcock*	Birds	Early successional forest
6. Henslow's sparrow*	Birds	Grasslands

*time-permitting



Northern bobwhite, cerulean warbler, swamp rabbit, copper-bellied watersnake. Credits: IDNR, John Cassady, Glenn Wilson, Debbie Burton